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Volume 12 MAY, 1937 Number 3

Teaching Objectives and Methods in Emory University School of Medicine, Atlanta, Georgia

Teaching of Surgery*

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I think we are in agreement as to the objectives in surgical teaching, for we aim to graduate a doctor who is able to diagnose ordinary surgical conditions, who understands their natural history and clinical course, and who understands what therapy is to be applied and when to apply it. I think we are agreed that he should be taught the general principles of infection, wound healing and repair, and anesthesia; that he should be directed in what he reads, and be taught to evaluate what he reads; that he should have, from the standpoint of inspiration, if nothing else, some knowledge of the history of medicine; and, above all, I believe he should be taught to think in terms of pathology and physiology, biochemistry, not only in making a diagnosis but, more particularly, in applying his therapy. While our objectives may be largely the same, the road by which they are reached may be quite different.

Emory is primarily a clinical school, and those of us who are engaged in part time and full time teaching are interested in teaching undergraduates in medicine. We have adequate clinical facilities in a 500 bed hospital and in a large outpatient clinic. I think all of us feel that a student learns more by doing than in any other way, and we try to expose him to as many patients and as many conditions as possible.

The teaching of surgery begins in the first year, with clinics one hour a week in conjunction with the professor of anatomy. I think those who have not taught in the first year will find our students more enthusiastic and results better than in any other class which we may teach. Our primary aim is to teach applied anatomy. It does a great deal to stimulate enthusiasm and keep it going through the preclinical years. At the time of dissection of the chest, a patient with empyema is shown. The wound is exposed. The students are quizzed or have demonstrations regarding reflections of the pleura. They are told how the

*Read at the Forty-seventh Annual Meeting of the Association of American Medical Colleges, held in Atlanta, Georgia, Oct. 26-28, 1936.

rib is resected, the anatomy of the periosteum, of the nerves, and they are shown the instruments.

An aneurysm of the subclavian artery is shown, which leads to discussion of the obliteration of that artery; and the collateral circulation, which the student has studied in his textbook but has no knowledge of its effect. Such a patient may have pressure symptoms on the brachial plexus. The motor and sensory changes following section of that nerve are shown, and some discussion as to the manner of suturing, and likewise wound healing and nerve regeneration.

Roentgenograms of fractures of the femur at different levels are shown to illustrate to the student that origin and insertion of muscles is an important thing, particularly in displacement of fragments. Likewise, appliances are shown whereby muscle pull may be overcome and fragments put in apposition.

Hernia is shown; the embryology of the descent of the testicle, and other embryological defects which arise from hernia, and types of hernia as related to the embryology are discussed.

These clinics are continued into the second year, in which students can be carried a little further. They are given in conjunction with a course in physical diagnosis. Here a patient with empyema may be shown, in which the physical diagnosis of fluid in the chest is stressed. The operation is again mentioned. The bacteriology and pathology of lung and pleural infection can be discussed. The physiology of respiration can then be understood by the student, and particularly the altered physiology of respiration which takes place when the chest is open. Or a burn is frequently shown to the second year students in order that the chemical changes taking place in the blood may be discussed. The question of fluid balance and water loss, and things which he studied in biochemistry can be brought to the bedside.

In addition, in the second year a course in minor surgery is given in which ordinary principles of infection, wound healing and repair, the use of instruments for various operations are shown. This course is given in the hospital and not in the classroom. In this course instruments of precision are stressed in an attempt to bring the student to his third year knowing something about them: the x-ray, what it is and what its limitations are; the ophthalmoscope; the proctoscope; the stomach tube; the clinical thermometer. He is even taught to count the pulse. Bandaging and application of splints are shown. Operating procedures in the operating room are shown, as well as methods of sterilization.

Students in the second year are taken on the wards and shown hospital routine, taking temperatures, keeping charts, making beds, giving enemas, hypodermics, and various hospital procedures which are ordinarily carried out.

In the third year, we have encountered more difficulty in teaching than at any other time. If students are merely assigned a textbook and quizzed on that, they lose contact with newer things. If lectures are given, they are usually not so good as the student might memorize from a textbook. We have

attempted to strike a mean between the two by having, in addition to textbook assignments on surgical pathology, lectures and quizzes by various members of the staff who are more particularly interested in a given subject, one, perhaps, on the chest, another on the thyroid, and another on the gastrointestinal tract. This is two hours a week throughout the year and includes surgical pathology.

In the third year surgical anatomy is given two hours a week, a review and demonstration course. For two hours a week, for half a year, demonstrations are given in the cancer clinic, in which patients are shown who have various malignant lesions. In addition, x-ray and radium therapy is described, and contraindications to their use are demonstrated.

The main work which our students have in the third year is in the outpatient clinic, where they work every afternoon, a half year in surgery and its specialties, and the other half year in medicine and its specialties. We feel that surgery can better be given to third year students in the outpatient clinic, because the student is not ready to assume his responsibility for the care of hospital cases, nor is the hospital willing to grant to the third year student the responsibilities to which we admit them here.

In the fourth year we have a clinical clerkship of three months, in which the student does nothing but surgery, except that one hour a day he meets with his whole class in a lecture or demonstration or clinic in some other subject, such as obstetrics, pediatrics and medicine. In that way he can devote most of his time to his clinical clerkship, but at the same time not lose contact with his class nor with medicine in general. During these three months, he is a part of the hospital service. His history, corrected, becomes a part of the permanent hospital record. He sees a patient from the time he enters the hospital to the time he leaves, and is responsible for everything done, or at least for knowing something about what is done for the patient. We have a student assigned to the hospital at night to work in the outpatient clinic, and, when emergencies are admitted, that student follows the patient into the house.

He presents his cases on ward rounds. He goes to the operating room and scrubs for his own case. He acts as stenographer in taking operation notes. He takes the specimen to the surgical laboratory himself. At a pathological conference, once a week, he again discusses his case, presents the gross specimen, and is shown the microscopic section.

In addition to that, he has an anatomy review one afternoon a week and three ward rounds in general surgery; on one, a number of cases are shown by a visiting man; another, in which a few important cases are shown; and the third, which I think is very important, which is given by the resident surgeon, diagnosis is not stressed but treatment is, and the student is shown and helps with such procedures as intravenous medication, lumbar puncture and various hospital procedures.

Teaching of Obstetrics*

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During recent years much has been written on maternal mortality in the United States. Efforts to decrease this mortality are becoming more persistent and widespread. The subject is a complex one and involves many factors. It is probable that the two predominant causes of this mortality are the medical profession and the economic status of the women. The part that the medical profession plays in it is inseparably linked with the teaching of obstetrics in our medical schools.

Regardless of how well the teaching objectives in the teaching of obstetrics may be thought to be planned, we are quite unable to accomplish our purpose if we do not have ample clinical material to carry out the objectives sought. We are very fortunate here in Atlanta in the abundance of clinical material which we have, which enables us to carry out these plans more efficiently.

Fifteen years ago, we had scarcely anything that one might call a prenatal clinic. In fact, we had to go out and try to get patients for prenatal material. Now, with perhaps 3,000 confinements a year available in the two hospitals, the colored and the white, 90 per cent of all the patients delivered in the hospital are voluntary attendants of the prenatal clinic, which makes very abundant clinical material.

We have been asked to present a brief discussion of the teaching of obstetrics in the Emory University School of Medicine. Certain fundamentals in which we believe influence all of our obstetric teaching.

1. We believe that obstetrics is a major branch of medicine and deserves an equal place with medicine and surgery. Gynecology should not be overemphasized, certainly not at the expense of obstetrics.

2. We try to remember that we are training men to practice obstetrics as general practitioners of medicine, and not as obstetric specialists.

In other words, many of the practices and innovations that creep into obstetric practice, proposed by specialists in obstetrics, may be perfectly safe for a man who practices obstetrics as a specialty and has well equipped hospitals in which to work, but are not proper things to teach a man who is going to do general practice under perhaps more unfavorable surroundings and with unfavorable equipment.

3. We try to keep in mind that the most important essential in teaching any branch of medicine is to familiarize the student with the principles of the subject; he will later supply the details.

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*Read at the Forty-seventh Annual Meeting of the Association of American Medical Colleges, held in Atlanta, Georgia, Oct. 26-28, 1936.

For instance, in the treatment of eclampsia, instead of outlining the facts the student should remember, it is more important to teach him the principles by which he should approach the treatment of this condition: First of all, to protect the patient from bodily injury; second, to control the convulsions and induce labor, and then to try to eliminate the presumable poisons by elimination through the kidneys and bowels and, finally, to keep up supportive treatment. If he will remember those principles involved, he will be more apt to carry out a sensible course of treatment.

4. We believe that labor is a physiologic process and that the great majority of women will deliver themselves safely if properly managed.

They have ample opportunity to verify this in the handling of cases in the hospital, because Dr. McCord is a firm believer in conservatism and the value of it is very much emphasized in the practical work in the hospital. They see for themselves how patients who are left alone and watched carefully will, in the great majority of cases, deliver normally without the use of any operative procedures.

5. We stress the importance of constant repetition and especially conferences and the quizzing of small groups.

6. We believe that the primary consideration should be the student we are trying to teach. Clinical service and pratical contact are not sacrificed to give a glorified training to one or more house officers. The history and physical examination of the student are checked and become a part of the hospital record.

It puts the student more on his mettle if he realizes that the record he takes is part of the record that goes into the hospital records.

7. We try to make the student realize that he fits into the scheme of things naturally and is not a nuisance that must, of necessity, be tolerated. It is our belief that, so long as medical schools accept large classes, the training of the average graduate will be much lower than it should be.

Instruction begins in the second semester of the second year. It consists of didactic lectures, demonstrations and quizzes and continues for 32 hours. The course covers the anatomy and physiology of normal pregnancy. Special attention is given to pelvic mensuration and a thorough understanding of presentation and position. This work is absolutely necessary at this time if the student is to derive the maximum benefit from the antepartum clinic at the beginning of the third year. It is to be emphasized that this course is given by an experienced teacher and not by a young instructor.

It has meant a great deal in advancing the teaching of obstetrics to give the introductory course the second semester of the sophomore year. Formerly, when students were immediately put into the clinics in the third year, without having had this preliminary course, they were very much at sea for a while and did not get the value out of the clinical work they should have.

During the third year, 79 hours of instruction are given by lectures, demonstrations and quizzes. Much time is spent on the management of normal

pregnancy, labor and the puerperium. Special attention is given to the mechanism of labor and the anomalies of mechanism. The mechanisms are demonstrated on a full size manikin. Eighteen additional hours are spent in the antepartum clinic. Only new patients are seen in this clinic. The examination is fairly thorough and the instruction is individual. Each student will examine, as an average, twenty patients. Final quizzes for promotion at the end of the year are individual and oral.

Manikin work in this part of teaching in the third year is given a great deal of emphasis. There is no question but that it is the foundation on which a student will become impressed with the mechanism involved in labor, and he will be more apt to appreciate what is going on in the normal patient.

Didactic lectures and quizzes are given during the fourth year (64 hours). Parenthetically, we think that our didactic lectures are of value and have never thought of discontinuing them. The class is divided into groups of four or five for their practical work. For six weeks a group spends its entire time on obstetrics. The time is equally divided on the white and colored wards of Grady Hospital. Eight hours out of every twenty-four one student is on active service. During this time he is in the delivery room; nowhere else. We feel that the observation and examination of women during normal labor is of great value.

The student on active service delivers all normal cases under the supervision of the resident, assistant resident or intern.

This is a great advantage. Fifteen years ago the practical experience was obtained by students on an outpatient service or by deliveries in the home. I am sure it was quite impossible to properly supervise these men in home deliveries and give them all the advantage of teaching which we now are able to give with the cases in the hospital under direct supervision.

This is not wholly true on the white wards because he does not deliver all primiparous women, but he does assist at all of the deliveries. The student on inactive service gives the anesthetic. This student also makes ward rounds with the attending obstetrician and the residents and writes their dictation on the charts. Rarely will a student deliver fewer than thirty women; some will deliver as many as sixty-five. Students observe many patients in labor whom they do not deliver. Complete records of labor and postpartum observations are required.

A group of five men spend 24 hours in the examination and care of newborn infants. The instruction is given by the professor of pediatrics. The professor of obstetrics has two conferences a week for six weeks with the entire group on obstetrics and gynecology. The group consists of twelve or fourteen students. The time is spent in individual quizzing, general discussion and informal talks on practical obstetrics. For six weeks the obstetric group of eight or ten men have two hours a week of manikin instruction and demonstration. This is given by an assistant professor, long trained in the work. It in-

cludes a review of presentation and position, the mechanism of labor and the abnormal presentations. The forceps operations and internal podalic version are studied.

Under the supervision of the attending staff these students, in groups of four or five, examine antepartum patients. There are three clinics weekly. An average of 250 women are seen each week. Ample opportunity is afforded for the early recognition of hypertensions, toxemias and other abnormalities and complications of pregnancy. Women having serologic evidence of syphilis are given antisyphilitic treatment by these students. This is done under the supervision of a member of the obstetric staff, long trained in this work.

The entire group on obstetrics and gynecology attend a pathologic conference two hours a week for six weeks. Each student has his own microscope. Here, the common lesions of obstetric and gynecologic pathology are shown and discussed. Student examination for graduation is individual and oral and embraces the three years of study.

This intensive work on obstetrics for a period of six weeks, rather than having it spread out over the entire year has been a very great advance and help in properly teaching the subject. During a period of six weeks, the student not only has his experience in deliveries, delivering anywhere from thirty to sixty patients, but he follows them up in their postpartum course. He follows the babies in the nursery under the supervision of the pediatrician. He attends the prenatal clinics, where he has ample opportunity to see the development of toxemias, the occurrence of hemorrhages and the management of them. He attends a special clinic in syphilis where syphilitic women are treated, and he sees for himself the advantages of antisyphilitic treatment. A complete review of the work is constantly being carried out through the conferences which are held. The pathology concerned in obstetrics is given through an experienced instructor, which serves to anchor his clinical knowledge to the fundamental pathology.

We do not have an outdoor service. It is our opinion that probably many such services are from necessity rather than choice. Such a service requires costly supervision. Without adequate supervision, students get into careless habits and quickly gain a false sense of superior knowledge and security and the service becomes a menace to both patient and student.

In the final analysis, the intrinsic worth of any department of obstetrics depends almost entirely upon the unswerving loyalty, co-operation and ideals of its attending staff. Fortunate is the head of a department that has such a staff, and we are that fortunate.

DISCUSSION

DR. J. M. H. ROWLAND (University of Maryland) Baltimore, Md.: A successful course in obstetrics is one of the hardest to conduct, because of the very nature of the service. However, to be successful, it must be assumed or made certain by review that the student has had the basic instruction which he ought to have had in anatomy, including histology and embryology, in physiology, physiological chemistry, etc.

In anatomy, one of the greatest mistakes many men make in teaching obstetrics is to forget that the actual delivery of a woman is largely a mechanical affair; that the mechanism of labor and forceps delivery is a thing which cannot be known by the student and cannot be demonstrated to him until he is perfectly familiar with the anatomy of the bony pelvis and the soft tissue and organs of the pelvis, including the pelvic floor.

In our own clinic, we start off with a review in anatomy, not as a lesson in anatomy, but as a lesson in the application of anatomy to the business of obstetrics. When we talk about the mechanism of labor, we carefully review it again. We review it again before we go into the application of forceps and version. Dr. Bartholomew stressed repetition. In no place that I know of in teaching is it as necessary to have as much repetition as in applied anatomy in the teaching of obstetrics.

The Doctor says they have not given up didactic lectures. I was glad to hear him say that. I know the general feeling of nearly all clinical people about didactic lectures. I know how little most of them think of them, but in the matter of lecturing, as in everything else, it depends entirely on the man who is doing the teaching. One man likes didactic teaching, one likes demonstrations, one likes quizzes, and one likes recitation courses. The fact is, each man must be fully persuaded in his own mind and do it in his own way. The good teacher needs no method but his own. He has developed the proper methods for himself if he is a good teacher. If he is not, he had better be doing something else.

I was particularly interested in the matter of outdoor clinics, and what he said about the outdoor clinic being frequently a matter of necessity, rather than choice. I have had experience in both conditions. Our outdoor clinic was first developed because it was nearly the only one we had. Now, when we have two clinics in which we deliver 2,800 or 3,000 women a year, we still continue to use the outdoor clinic, because I consider it about the only place where the student has some approach to social service work. We require our students to deliver at least ten women in the home, under supervision.

Our whole idea of teaching obstetrics might be summed up in this: that we, first, by didactic or other methods tell them how to do it. Then, with manikin, with patients, moving pictures (most of our moving pictures, by the way, are made in our own clinic), or by whatever method we choose, show them how to do it. We then allow them to do it under careful supervision.

The Doctor spoke of another thing which I am glad to emphasize, and that is the matter of conservatism. The old statement was, as you know, that the best waiter was the best obstetrician, and, in the main, that is true. Most women will deliver normally, if let alone and handled properly, but the waiting must be watchful waiting. It must not only be watchful but intelligently watchful. We sometimes forget that one may wait too long. It is true, however, that twenty children are lost and twenty mothers are damaged in the radical, hurried type of work, to one lost where intelligent watchful waiting, with interference when necessary, is employed.

We are constantly trying to avoid the introduction of too many radical measures. We forget sometimes, however, that radical measures may often become conservative. For instance, the matter of the cesarean section in placenta praevia. The reports from Bill at Cleveland and Adair and Lee at Chicago, and in our own clinic, where the mortality rates have been reduced from the 6 or 10 per cent usual in most clinics using so-called conservative measures to 2 or 3 per cent.

I am delighted to hear Dr. Bartholomew's paper. The type of teaching which he describes is so exactly what we like that I was very much pleased to hear it described.

Objectives and Methods in the Department of Internal Medicine*

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Instruction in internal medicine makes evident more than in any other department of the school the necessity of teaching the student how to think about the patient and his problem. Inasmuch as the thinking process is one that requires a method and a means there are two objectives which must be reached by the instructor. First, he must recall the student's previously acquired knowledge and experiences and make new knowledge and experiences accessible to him. Second, he must assist the student in learning how to use this knowledge and these experiences in deductive and inductive reasoning about the problem of the patient. Perhaps, the most difficult thing for the student to do is to find a starting point for this reasoning process. There seems to be no safer point from which to start than the student's concepts of structure and function and their disturbances. We try to develop in the student the ability to regard the patient from the broader standpoint of his physical, mental, social and economic aspects and to consider the symptoms and signs of his health problem as expressions of disturbances in them.

There is so much in internal medicine that is uncertain, there is such constant change of viewpoints, there is such continual revision of what are considered facts, that neither the practitioner nor the student can think clearly about the patient unless he has a sufficient background of clear concepts. These must be in terms of structure and function. Although all of the faculty work with the same objectives and methods no attempt is made to have them establish a uniform viewpoint. On the other hand, it is preferred that the student choose the viewpoint which appeals to him most or better develops his own individual concepts. After graduation he will be forced constantly to remould his ideas as facts and opinions change. He had better learn to do this under the patient and interested guidance he will experience only in his student days.

Again, internal medicine has limitless ramifications into all the other specialties and branches of medecine. We meet this situation in two ways: first, by carrying the consideration of the patient in the medical department through these ramifications, and second, by using the other departments as consultation services. In the latter, we are particularly fortunate in the fact that the hospital is compact and the communication between departments is easy. When it comes to the specialties within internal medicine, no attempt is made to route the student through all these fields.

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The first contact of the department with the medical student is in the sophomore year. These students have a weekly clinical conference as a group with one of the professors of clinical medicine. The conference consists of the discussion of various clinical manifestations in the light of their relation to function and structure. Carefully selected patients are presented with the idea of beginning in the student the habit of looking at symptoms from the standpoint of their significance instead of the part they may play in a diagnostic pattern.

Another hour during the first semester of this year is devoted to history taking. The first thing we do is to bring out the point that the patient comes to the doctor because of a health problem and wishes to know,—how serious is it? Can it be cured? If not, what effect will it have on his future life? The student's own meager experiences are drawn on to illustrate and emphasize these points. The second principle developed is that the condition of the patient, as he presents himself in the doctor's office is, broadly speaking, the result of heredity and environment; that environment includes those experiences which may influence his mental as well as his physical make-up and that his symptoms represent evidence of these influences on his physical and mental well-being. The third principle considers the nature of disease. To bring out this, the student's own experiences are again drawn on to illustrate physical trauma, infection, neoplasm, metabolism, exhaustion, emotional states and mental disturbances. No attempt is made to elaborate these principles. They are discussed merely for the purpose of making clear the procedure of history taking and giving a reasonable basis for it.

Consideration is next given to the actual method of questioning the patient, the choice of words or phrases and the framing of a question so that it will be comprehensible to the type of patient under consideration. This seems a good time in the student's education for such emphasis as he himself is essentially in the position of a patient so far as medical language is concerned and he is in the best position to know how to ask questions which he himself can understand. After this preliminary work, the class proceeds to the history itself. A guide is used, beginning with chief complaint, present illness, family history, past history, etc., ending with the system review. The objective in considering the history itself is to bring out the purpose and manner of securing information from the patient, all within the student's comprehension at that time. It is recognized that only mature experience and extensive knowledge will enable the clinician to take a good history. On the other hand, the sophomore student is ready to appreciate, within limits, the fundamental principles and methods of history taking and to acquire a framework which will facilitate his work in the junior and senior years.

In the second semester of the sophomore year, the student is introduced to the subject of physical diagnosis. This, again, so far as possible, is developed as an extension of previous experiences. Physical signs, both normal and abnormal, are considered from the standpoint of their physiological, physical, structural and pathological bases. Instruction during the earlier part of the semes-

ter is in the form of discussions and quizzes based on textbook material which has previously been studied or read by them. These discussions are continued for the remainder of the semester and, in addition, the class is divided into small groups, each of which is under the direction of a competent instructor. The technique of the physical examination is demonstrated and performed by the students. After sufficient examination of the normal, patients with abnormal physical signs are presented. An effort is made to give them frequent and abundant experience in appreciating abnormal physical signs. Particular stress is laid on visual observation. By the end of the sophomore year, practically every student will have had the opportunity of realizing most of the physical signs and symptoms which he will be expected to encounter at the beginning of his junior year.

In the junior year, instruction is given largely in the form of ward clinical clerkships. This is done in groups of six or seven students. However, we still feel that there is value to be derived from exercises which retain the quiz-lecture or clinic form and include the whole class. These latter are limited to six hours per week, utilized as follows: Two hours for a textbook survey; one hour for a consideration of metabolic diseases and nutrition; one hour for general medical clinic with patients; one hour for a straight therapeutic clinic; one hour for a continuation of the study of history taking and physical diagnosis, using ward patients who have been assigned to members of the class. The student responsible for the patient comes to the platform, presents the historical and physical findings to the class and gives his impressions and the reasons therefor. Following his presentation other members of the class come forward as discussants. The purpose of this procedure is to train the student to think and speak without notes while standing before a group of people. It is probable that no other experience so well impresses the student with the soundness or lack of soundness of his ideas and impressions. This same procedure is followed in all the work of the clinical years.

The junior clinical clerkship covers a period of one semester (four months), half of which time is spent in the white medical wards and half in the colored medical wards. Selected patients are assigned the student for study. He takes the history, makes the physical examination and such laboratory examinations as are indicated and lie within his ability. On four days of each week, there is a two-hour ward round. During this, patients are presented by the student responsible and discussed by the group (six or seven students) and the instructor. The schedule is so arranged that from three to five hours daily are available for use by the student for working up cases, and studying patients.

In the almost straight block system of organization of the senior curriculum, one-fourth of the class at a time works in the medical department for a period of two months. Each student has a room in the outpatient department where he works daily throughout the morning as he would in a private office practice. He receives one or two new patients each day and these return to him on all subsequent visits. The student's history and the results of his examination,

together with his impressions, are discussed with an instructor and treatment is decided on by a conference between the two.

At 11:30 o'clock each day the group of outpatient department clerks meet for a half-hour conference. One of them presents a case for discussion. These conferences are led one day a week by each of the three professors of clinical medicine and on two days by the chairman of the department. In addition to the usual purposes, these conferences give the student the benefit of the differences which exist in the approach and thinking methods of three clinicians other than those who may have discussed the case with him individually during the earlier part of the morning.

Instruction in the department of internal medicine may be described, in brief, by saying that our efforts are directed toward making it possible for the student to acquire a continually expanding store of related facts and principles, developing one out of the other, to realize clinical experiences associated with these facts and principles and from them to think logically about the problem of the patient. At the same time we strive to help the student form clear-cut concepts of disease as expressions of disturbances in structure and function and to modify these concepts as changes in the science of medicine require.

DISCUSSION

DR. JOHN WYCKOFF (New York University) New York City: Last night, Dr. Oppenheimer accused me of saying that there are practical medical schools and scientific medical schools. I really believe that there are good and poor medical schools, and schools that lie in between. I found on inspection of about fifteen schools that in some schools there was a tendency to say, "We are a practical school; we do not pretend to do thus and so, as they do in the scientific schools." My point was that usually, it seemed to me, it was in such self-named practical schools that the fact finding techniques were most poorly taught, that the actual relationships between student and patient were more meager, and that the opportunity to follow the course of disease and to find out the results of the hypotheses built up by the student was much less evident.

It seems to me that one must teach medical students how to collect facts, how to reason from facts—that is, how to build up a hypothesis—and, then, how to find out for himself whether or not that hypothesis is a correct one.

There are many ways to do that and, as Dr. Rowland said, the good teacher chooses his own ways. Of course, it is difficult to begin to reason and build a hypothesis without some knowledge of patterns. I think one of the great difficulties we get into in discussing the teaching of clinical subjects is that we think too much about the teaching of these various patterns.

There is much discussion as to whether or not one should be taught the pattern of a particular disease by lecture, from a textbook, by demonstration of patients, or by having the student study the patient or a series of patients and develop ideas of patterns in his own mind. Of course, no patterns are ever absolutely identical. No patterns are a pattern of one disease process itself. It is a pattern as it is changed by other systems being out of order, by the environment of the patient, by the mentality of the patient, and a great many other factors.

I think there can be no question that a course in medicine cannot be a good course unless the student has an opportunity himself to collect facts from patients, and to build up his own hypotheses and find out whether he is correct. To do that, he must be able

to prove whether he is right or not by collecting additional facts, facts which are collected by rather difficult techniques; we will say, by a special roentgen examination, possibly by an electrocardiograph, or some other special type of examination. Second, he may find out whether or not his hypothesis is correct by following the course of the disease. Third, he may find out, if it is on a structural basis, that is, the change of pattern from the normal, as the result of an autopsy.

It seems to me that no medical school can teach properly unless these opportunities are given to its students. In the giving of these opportunities, certain things are very fundamental. For example, the course of disease cannot be studied when students are only on a service for two or three weeks. One of the very fine things about the organization at Emory is that students are able to follow the course of disease over some periods of time. In all of our better schools the first thing that strikes one is that the medical student is able himself to come in contact with and study patients over certain lengths of time.

I am in complete agreement with Dr. Oppenheimer that the specialties in medicine should be taught in direct relationship with general medicine; that is, that heart disease, gastrointestinal disease, diseases of the blood, and metabolic disease should all be taught in and as part of the general medical clinic.

We work in a very large hospital and have chronic disease clinics in order that patients with certain types of disease may be followed for long periods of years. We have found it very useful to have practically all of our students work in at least one chronic disease clinic for a period of at least a year. This is very easily arranged. Most of our chronic disease clinics have only one session a week, and students work in such clinics one day a week for a period of a year, and many of them work there for two years. At the end of that time, they have an entirely different conception of disease than the student has who only works in an organization where he sees patients in bed or on an outpatient service, many of whom have only short, acute illnesses. A student who follows patients, we will say, with diabetes through a period of a year learns something not only about diabetes and its complications, and the diseases that are associated with it, but also that many illnesses are things that people live with and have to learn to live with over long periods of time.

Teaching of Pediatrics*

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The tremendous progress made in pediatric education, both in undergraduate and postgraduate instruction, during the past twenty years has been phenomenal. Today the subject of pediatrics is regarded in more than 90 per cent of the American medical schools as one of the four basic clinical subjects, a definite and distinct department of equal rank with those of medicine, surgery and obstetrics. This trend in medical education signifies the realization by educators of the prime importance of this branch of medicine to the practicing physician. It emphasizes clearly the fact that the great majority of the children of this country are cared for, not by the pediatrician, but by the man in general medicine, and it forcefully demonstrates the efforts of the medical schools to meet this responsibility. In short, the principle is established that not only must the graduate of a first class medical school be competent to practice medicine, surgery and obstetrics, but also he must be proficient in the field of pediatrics. It is the appreciation by medical education of the tremendously important fact that the infant and child are not miniature men—that their behavior in both health and disease is quite different from that of the adult.

The pediatric department of Emory University attempts to translate this principle of medical education into practice. Its objective is to aid in the molding of a general practitioner well grounded in the basic problems of infancy and childhood in both health and disease.

The introduction of the medical student to pediatrics is probably more difficult than his first encounter with any other clinical branch of medicine. The reaction of the infant and small child is completely mystifying to him. The problem of rendering medical aid to a hostile, suspicious patient, at times in open revolt, seems well nigh insurmountable. A complete readjustment in his attitude toward the patient must be accomplished before progress can be made. The approach to the child is an art which in pediatrics must be assiduously cultivated.

Equally difficult for the student to comprehend are the reactions and behavior of different members of the family. Motherhood, as he now encounters it, seems entirely out-of-character, often selfish, demanding, exaggerating—with but one thought: "my child is ill, no other child matters". . . . Busybody grandmothers countermanding orders, offering suggestions, boot-legging remedies. . . . The bewildering importance assigned by a host of adults to the sickness of a child.

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Is there any wonder that confusion and defeat seem inevitable to the young student approaching his first, screaming little patient? What value to him if he has learned with minute care the significance of a heart murmur, the importance of impaired resonance or tubular breathing, the meaning of an inflamed ear? He is completely confounded by the organism as a whole. He came to study disease, but he finds he must deal with a patient. He expected to encounter viscera and instead he is brought face to face with a screaming personality.

This it seems to me is the first and greatest problem we encounter when teaching pediatrics:—the attitude to be assumed toward the child and his family. The clinical approach to the infant and small child is so widely different from that of any other. Only by long experience and abiding patience can one hope to master the art, yet by constant instruction and example much can be done to make the way easy for the student.

At Emory University, the pediatric department is manned solely by persons engaged in the active private practice of pediatrics. Necessarily, therefore, the type of instruction must lean definitely toward the practical clinical aspect. The student has the advantage of frequent contact with at least six of these men. He observes the different methods employed and begins to appreciate the varying opinions which may be held by the individual physician.

The third year student at Emory University receives a one-hour lecture each week in pediatrics, in which it is attempted to give him the basic facts concerning growth and development, prevention of disease, and the care of the infant and child during health and disease. Stress is placed on the importance of his attitude toward patient and parent. The importance of history taking and physical examination is emphasized by means of demonstration. The physical examination shows him clearly the many variations to be noted between infant and adult and for the first time he becomes cognizant of the fact that the baby is not simply a little man, but that he differs widely both in physical findings and physiological behavior from the adult. This fact is emphasized even more clearly when he is instructed concerning the behavior of the infant and child during disease. The significance of symptoms and signs is dealt with in considerable detail and contrasted with those of the adult.

It is generally agreed, I think, that pediatrics has led the entire field of medicine in the prevention of disease. It is fitting, therefore, that throughout the student's course in this subject preventive measures should stand paramount. This phase of medicine is constantly instilled from the beginning of the third year lectures, throughout the bedside teaching and outpatient work of the fourth year.

Methods of presentation of the nutritional problems and diseases of infancy and childhood vary widely. It is our feeling that if a genuine interest can be aroused in the student much of what is being presented sticks. Such interest cannot be attained by didactic presentation from either the text employed or one's own store of knowledge and experience. Only by means of actual demonstration of the matter under discussion can one hope indelibly to impress the

student with the subject in hand. With this thought in mind a case report or case presentation with x-ray studies, laboratory reports, and pathological specimens forms the basis from which all discussion of disease arises. With this tangible material to which to cling, the student (I find) is more easily able to grasp the essential feature of a disease and not become entirely lost in a mass of apparently unrelated detail.

Guided reading is essential to supplement and round out the meagre presentation of the lecture room. No problem do I find more difficult than that of instilling into the student this fundamental principle of medicine. My observation is that, as a rule, this invaluable lesson is not learned by the large majority of students until several years after they first encounter the clinical branches of medicine, if, indeed, it is ever learned.

In order to obtain a check on the student's interest and industry, an occasional quiz seems a necessary evil, although I have never been quite convinced that time thus consumed might not, after all, have been spent more advantageously in presenting the innumerable problems which one never seems to find time to fit into his alloted hours.

Conservation of the student's time should constantly be a matter of concern for the instructor. By means of close co-operation and correlation between the various departments much duplication may be avoided. It is our purpose in the third year to present those problems which are peculiarly pediatric, touching in only a superficial manner those conditions in childhood which are quite similar to those in the adult. For example, much stress is placed on the diseases of the new born, congenital anomalies, nutritional disorders, the contagious diseases, etc., whereas relatively little is said of pneumonia, typhoid fever, diabetes, nephritis, etc. Only in this manner is it possible to approach the goal of a clinical pediatric foundation during the third year.

Not until the fourth year does the student in pediatrics at Emory University come directly to the patient for his instruction. The senior student devotes one month of his fourth year solely to the study of pediatrics, with the exception of a one-hour lecture each day. The facilities available for this instruction are a pediatric ward of Grady Hospital consisting of 40 beds for the treatment of negro children suffering from both medical and surgical conditions; the Henrietta Egleston Hospital for Children, a 50 bed hospital for the care of white children; the contagious units of the municipal hospital, containing 59 beds for the care of white and negro patients; a seventeen bassinet nursery for the care of the negro newborns, an outpatient department for negro children, and a well baby clinic for negroes.

The students, in groups of six or seven, serve as clinical clerks on the pediatric ward of Grady Hospital for negro children. At the beginning of each month, the patients on service are assigned equally to the men of the pediatric group so that each man has four or five patients for whom he is held responsible by the house staff and visiting physicians. The new patients are assigned in rotation to the student, who must work up each case completely, getting history,

making physical examination, doing all laboratory work, and making daily progress notes. The group is met five times each week by three members of the visiting staff for bed-side conferences. The student presents his case in detail to the entire group, gives his impression and is then checked by the visiting physician, who discusses the problem presented. During the month each student has directly under his care from fifteen to twenty patients.

Twice each month, the visiting physician holds, in the evening, a conference for both house staff and students. This meeting is conducted by the resident physician. Cases are presented by the student for full discussion by all present. The visiting physician emphasizes particularly those points in the care of the patient which would be of value in home care. These conferences are enthusiastically received by students and house staff and are of much value, not only for the information arising from the discussions, but also for the training in case presentation before a group.

Twice each week, the pediatric group reports at the Henrietta Egleston Hospital for Children for bedside teaching and diet kitchen demonstration. To each member of the group is assigned a patient with history only. The student makes the physical examination, requests whatever laboratory work he desires, makes his diagnosis and suggests treatment. The case, as worked up by the student, is presented to the group later in the morning for discussion and comment by the attending physician.

Once each month the psychiatrist joins the group at the Children's Hospital when one or two cases presenting definite problems in child psychiatry are discussed. With the increasing importance of this phase of pediatric education we feel that this type of instruction should be expanded.

Instruction in the preparation of formulae and infant foods is given once each week at the Children's Hospital by the dietitian. The student not only observes but actually prepares the foods himself.

The student is given an opportunity for bedside teaching of contagious diseases one afternoon each week. The wards of the municipal hospital have 40 beds for white patients and 19 beds for negroes. The service is quite active during the winter months. The patients suffer chiefly with scarlet fever, diphtheria, whooping cough and cerebrospinal meningitis. The student has opportunity to see little, if any, measles, chickenpox, mumps.

The well baby clinic for negro infants is held twice each week for a period of two hours each time. There is a very close co-operation between the new born service and this clinic, which is attended by an average of 50 babies each day. Well infants up to 2 years of age are admitted for management and care. The student has his own patients throughout the month and, under the supervision of members of the staff and the house physicians, he is given instruction in management of the breast fed infant, problems of weaning and infant feeding, immunization against diseases, etc. Prevention is the keynote of this clinic. The student does his own diphtheria immunizations and Schick tests, smallpox vac-

cinations and typhoid injections. He learns to appreciate the value of periodic examination of the infants and sees the results of proper infant feeding.

The outpatient department for sick children is held three afternoons each week. The daily average attendance is 50, with eight new patients daily. As a rule, the student is assigned one new patient each afternoon and is given from 30 minutes to 1 hour for the work-up. At the end of this time, the group is assembled for presentation of the most interesting cases and discussion by the instructor. Any case for hospitalization is admitted by the same student who studied the child in the outpatient department and continues as his patient throughout the stay in the hospital. Those children who remain as outpatients are advised to return to their same "doctor" on each visit. The student is urged to establish an intimate relationship with his patient and the parents. By the end of the month, he generally has a clientele of from twelve to twenty patients. In addition, he has had the privilege of observing all the interesting cases coming to other members of the group.

A reading club is conducted one hour each week by a member of the staff. The student is assigned some subject, generally pertaining directly to one of his patients, either on the pediatric ward of Grady Hospital or at the Henrietta Egleston Hospital for Children. He is asked to prepare a brief monograph, bringing out the salient factors as encountered in standard texts and in current literature. These papers are then presented before the entire group and frequently prove of exceptional character.

During the student's obstetric service, the department of pediatrics gives him instruction and demonstration in the care of the newborn. He is required to make a complete physical examination at the birth of the babies he delivers, and thereafter daily progress notes on a certain number of infants. Twice each week there is formal instruction by members of the staff, stressing care and management of the newborn and prematurely born, with a discussion of the common disorders encountered as this age, and, of course, case presentation when available. The student is required to prepare a brief paper discussing one of the common symptoms indicating disease in the newborn from the standpoint of differential diagnosis. Such subjects as fever, vomiting, cyanosis, convulsions, hemorrhage, etc., are those usually included.

As stated above, throughout the fourth year the senior class is divided into small groups with work for a given period confined solely in a certain department, with the exception of one hour daily, when the entire class meets for clinical lectures. During the last half of the school year this hour is devoted to pediatrics once each week. The students at the time serving as pediatric clinical clerks present before the class patients who become the bases for discussion by the instructor of important pediatric problems. Behavior problems, mental hygiene and problems in child psychiatry are stressed at these meetings.

At the close of the student's service as clinical clerk, he is required to report to one of his instructors for an oral examination which may embrace

any phase of general pediatric knowledge. The result of this examination, along with daily grades supplied by the various instructors, furnishes the basis for determining the student's proficiency in the subject. The long, final written examination has been discarded.

In this day of feverish activity among lay and professional groups in the field of social medicine, I am impressed with the fact that the student graduates with meagre, if any, knowledge of the growing social responsibilities placed on the medical profession. He knows little of municipal, county, state and federal bureaus and agencies administering various phases of this problem—and less of their economic implications. Since these activities are concerned in large part with maternal and child health, it would seem fitting that the pediatric department should assume the responsibility of informing the student in such matters. With the passage of the Social Security Act and its provisions for maternal and child health, the crippled child and child welfare, it becomes even more important that the student learn something of the activities of the agencies administering the various phases of the Act in his state. He should be impressed with his responsibility to society, without forgetting that to the profession. An effort will be made during the coming year to present this matter to the fourth year class in a brief and, I hope, comprehensive form.

In conclusion, may I repeat that the goal of the pediatric department of Emory University is to equip the general practitioner with a basic knowledge of pediatrics which will enable him efficiently to meet the common problems of the child in health and disease.

Teaching of Psychiatry*

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The course in psychiatry at Emory University is intended not to train psychiatrists, but to produce better and broader trained general practitioners. To do this, the old dualistic concept of the body and mind as separate entities, reacting on one another, must be banished. The student is taught to think of the human being as a total organism in action. Mental processes are only one kind of action. In this way the "mind" is robbed of its mystery and the student tends to rid himself of the feeling that the study of mental processes is something peculiar and foreign to his immediate interests. Next, the student must be given broader attitudes: To think of the patient as a personality, a human being who incidentally contains diseased organs or whose physiology reacts perversely. He must also learn to consider this person in his settings: social, economic and domestic. He must learn that these settings may have a profound effect on the patient or that being in a diseased state the interaction between him and his environment may retard or make impossible his recovery. In this way, the future doctor learns to think in terms of persons moving in environments rather than in terms of the isolated behavior of diseased organs per se.

In order to carry out such objectives it is necessary, of course, to have material for teaching purposes. The course in psychiatry at Emory illustrates nicely the fact that large endowments, elaborate setups and ready made facilities are not essential to the teaching of such a course. In evolving our scheme the way has been made much easier by the ready and wholehearted cooperation of our Dean. Ten years ago the course consisted solely of sixteen lectures in the various reaction types in the fourth year. When another year was added the only clinical teaching consisted of one day of clinics at the State Hospital. It was necessary to find more adequate facilities for clinical teaching. Six years ago, the U. S. Public Health Service took over the management of the U. S. Penitentiary Hospital in Atlanta. They reorganized the hospital and established a well-run psychopathic ward with a full time psychiatrist. It was then possible for Emory University to make an affiliation with this hospital which has proven mutually advantageous. The material now available includes not only the patients on the ward but the general prison population. Every prisoner who enters the penitentiary is given a complete mental and physical survey. This material is unusually good from the standpoint of our objectives because there is during the year a predominance of the neurotic and borderline types of reaction over the frankly psychotic. This means that the student sees more especially the kinds of problems which will be presented to him daily in his future prac-

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tice. After all, a prison population is very little different in many respects from the extramural population. This material also presents the possibility for showing in a striking way the sociologic aspects of the problem. So there is a splendid opportunity for a study of the effects of the individual's previous environment on his behavior and his illness.

Emory University had no adequate outpatient or child guidance material. The latter, especially, has become a necessary factor in the teaching of recognition of early disorders and the possible element of prevention. When the government took over relief about four years ago, the family agency here in the city was freed of this burden. They then could carry out their original philosophy of rehabilitation of the individual and family on a more effectual scale. In order to do this, they employed a part time psychiatrist and two psychiatric social workers with a psychologist available for mental testing. The work now consists of: behavior and personality problems in the individual which, of course, are disrupting to the family; the problem of the unmarried mother and child placement; domestic relations cases, referred by superior court judges; and behavior problems in children, referred from the public schools or other sources. This offers rich material for teaching the student the social implications of disease and the intimate relations between environment and the behavior of the individual. It also gives material for child guidance instruction: the recognition of mental disorders in their incipiency and the problem of parent education and guidance. This material is now used by Emory for these purposes.

The course in psychiatry now consists of four years. The first teaching is done in the second half of the sophomore year for a period of sixteen hours. In a course in psychobiology, an attempt is made to show the importance of the life history of the individual in action in determining the material influencing that action; to teach the student to deal with factual material and to realize that all such material is important.

My experience has been that the average course in psychology which the student gets before entering medical school is of little or no value, and on the whole, I would rather the student would enter the medical school without any course in psychology. That could be corrected and should be, because it seems to me to be one of the essential factors in a premedical course. This is one of the reasons why it is very essential for us to have closer affiliation and closer contact with the departments which are dealing with premedical courses.

Also an attempt is made to correlate this individual in action with the organs and structures found in the cadaver in the course in anatomy and the study of these organs in action in the course in physiology. After this, the rudiments of psychopathology are given.

The course in the junior year starts with joint clinics with medicine. The purpose of this course is two-fold; to show that the person whom they are studying is at least just as important as the incidentally diseased organs and that he must be considered as a unity; and to show that psychiatry deals with

human problems and not solely with "crazy" people. In the latter instance, it is an attempt to free psychiatry from its former isolated position in medicine. In the second semester, sixteen conferences of one hour each are held. At these, the various reaction types coming more particularly under the specialty of psychiatry are discussed. Then there is discussion of various psychotherapeutic procedures in treatment.

In the senior year, joint clinics are held with pediatrics. The purpose is to show the importance of the child's environment in relation to disease. Stress is laid on the fact that the doctor's responsibility is not absolved by handling the child alone and the importance of studying the dynamic environment consisting of parents, relatives, teachers, etc. and attempting to correct bad spots found therein. For the entire year each student serves for about a week as clinical clerk in the psychopathic ward of the U. S. Penitentiary Hospital. Once a week, for two hours, conferences are held at which the cases worked up by the students are presented. Each student works up one case and does this in a very thorough manner. The philosophy of this is that he gets more out of one case thoroughly worked up than out of many loosely presented cases. This means a complete social or life history, a complete medical history, a physical, neurological and mental examination, and, finally, several days of observation. He must give in conference his impressions and some outline for disposition and treatment. Lastly, once a week, for two hours, in small sections, for four consecutive weeks, the student meets the staff conferences at the Family Welfare Society. At these conferences he gets personality problems but more particularly the behavior problems in children. In addition, he gets something of the technique and philosophy of social case work and becomes familiar with the agencies available to him in large cities. This year, in order to promote this further, the student is allowed the opportunity to do some case work on his own. This, in turn, is quite helpful in giving him more assurance and tact in approaching human beings in difficulty. All this work of the senior year, with the exception of that done with pediatrics, is done while the student is taking his medical block of time.

This course is far short of the ideals held in mind. A psychopathic ward in the University Hospital is sorely needed. More teaching personnel should be available. At present there is only one man assisting the head of the department. Dr. Beall, the full time psychiatrist at the penitentiary, does the instruction on the ward there. More time should be devoted to the more preliminary studies. There should be some facilities for research. But, on the whole, the department has progressed and certainly illustrates the possibilities for using available community facilities for teaching purposes.

Liberal Values in Premedical Education*

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In the impetuosity of our modern life, we rush headlong from goal to goal, and seldom take time to evaluate our real achievements and our progress. Sometimes, we move forward, sometimes in a circle, more often at a tangent, but in any case the devil is invited to take the hindmost. The idea need not be elaborated; if it is true in the social world, in the worlds of politics and government, in the field of technology and scientific invention, it is true, also, in education.

In this country, in the last twenty-five years, enormous progress has been made in medical education, and this, of course, has gone hand in hand with the development of medicine itself. The graduate in medicine today is "better than his fathers were,"—he has more at his command, if nothing else. He has taken more "courses," he has had much more elaborate scientific training and more bed-side opportunities before he begins practice and, with this background, he specializes early. With easy communications and much technical assistance at his command, he collaborates with specialists in other fields, and the stage is all set for what unquestionably is the improved treatment of the patient,—even if the latter is sometimes regarded as an experimental animal. But, behind all these advantages, there still resides this question: does the modern physician have any better insight into human nature than his predecessor? Is he a doctor in the ancient meaning of this word, or is he only a healer of organs? It is, therefore, of utmost significance that this body, the Association of American Medical Colleges, should pause in its deliberations to reassess certain values and consider the education of the whole man, for this is what I consider to be the purpose of this part of the program. It is the old question of leavening technical training with a liberal education.

This question is by no means limited to medical education. It appears in all the professions: in law, in engineering, in theology, and, paradoxically, in education itself. It has always been the genius of the American college to provide a liberal background for these professions, wherever and whenever they chose to avail themselves of it. In keeping with past traditions, it is to the colleges that the medical profession has turned to insure a liberal education for its own applicants. Certainly there is no field in which this need is greater; for where life and death are at issue the practitioner needs, in addition to technical training, every resource of mind, will, "heart" and body. The question is direct: where, in formal education, are such values to be secured and maintained?

A generation ago, the American college had well-fixed and justifiable notions

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as to what constituted a "liberal" or "cultural" education, even if these ideas were, perhaps, preconceived. The college had certain ideals and certain disciplines to which it sought to submit all of its students, as it were, to a common test. No graduate was turned out as professionally equipped, unless it were in school teaching and in maintaining the old tradition. But the graduate of those days had a high average when it came to thinking, both abstractly and practically; he knew his own language and could use it with precision, both in reading and in writing. He had been through a hard school, and he had learned to work with a minimum of wasted effort. As a result of his training, he was practiced in forming independent judgments in present situations, but he also had an appreciation of what other people in other countries and other generations had achieved, of what they thought of and what they did. He was heir to the culture of his age and of all the ages. If not adequately prepared, he was, at least, reasonably on his way to assume a position of leadership in society, either as a "good citizen" with sound judgment and good taste and charity toward his neighbor, or as a professional man, or as a public servant.

But we abandoned the ways of our fathers and turned to new gods, and the end is not yet! Many factors led to this, the chief of which may be summarized in this statement: changed methods for a changing world. Conscious of the value of education, in a growing democracy, we adopted the principle of "equal educational opportunity for everyone." And this, I think, is fundamentally correct; but in practice we made the fatal assumption that all are equally capable of receiving a higher education. We abandoned a naturally selective process of education and turned to mass production. Everything went topsy-turvy. The student determined what he should take and the educator acquiesced. Subjects of local, contemporaneous or native interest, which were normally on the periphery of the curriculum, pushed to the center, not because they had any great liberal value but because the students liked them, and the old disciplines were crowded out. Why study mathematics when you can *learn* advertising? Why study Greek when Spanish is so much easier and gets you by? Why study and master the elements of a science which you do not like, when your other professor will tell all about the family, crime and sexual perversions, and thus infinitely increase your wisdom or better, perhaps, your sophistication? Why seek opportunities to read or observe for yourself when you can have it poured into you *ex cathedra?*

The next step was perfectly simple and entirely logical. The earnest student conceived of college as a place where he could increase his earning capacity in his chosen field. If he took enough commerce, he would be prepared to run a business,—probably his father's. If he took everything in economics, he would be prepared to sell bonds and even to give advice on how to prepare an income tax return. If he took enough chemistry, he could qualify doubtless for a powder-plant job, or if enough biology, as a field entomologist or something of the sort! Always in the offing remained the hope of securing a teaching job, providing the student finished enough professional courses in education!

Is it any wonder, then, that the old concept of the college of liberal arts

and science has changed? Today, there are just as many definitions of what constitutes a "cultural" education as there are persons who deem themselves qualified to speak. These advocates of "cultural education" decry the obvious trend to professionalize the various departments of the college,—the job seeking objectives; but their ideas run the whole gamut of personal interests. Some would emphasize appreciation courses, in art, in literature and in science. Others would advocate "sampling" courses in the various fields of knowledge, with an impressionistic presentation and utter disregard of analysis and interpretation. Scientists too often express the opinion that a cultural course, in their respective fields, should emphasize such subjects as "the production of pure-bred hogs;" "the methods of manufacture of home-used articles, such as soap, salt and talcum powder, and the techniques involved;" and "recent advances in the manufacture of radios." As over against such protagonists there are those who see in the college of liberal arts and science nothing but professionalized departments, each to obtain its own ends by equipping the student as a wage earner. Hence, course is piled on course with no regard to so-called "cultural" values; or, at least, they are dismissed as inconsequential.

These may seem to be rather sweeping statements. That the colleges and universities of this country recognize that something is amiss is to be witnessed by the fact that so much experimentation is going on in these institutions. Having cut adrift from old established practices, we are trying to find a substitute for them. We hear much these days of "honors courses," of "orientation courses," which seem to be given at the wrong end of the curriculum, of an emphasis on "distribution" and subsequent "intensification" of studies, of the "junior college" and the "senior college," and of many other devices to strengthen the curriculum. All of which means that we have lost something of the old régime for which, as yet, we have found no adequate substitute. We are attempting to harmonize something out of the chaotic conditions of the last twenty or thirty years, something that may be of benefit to our civilization; but we do not know exactly in which direction this goal is to be sought.

Now, I am not one of those who think that we can turn back the hands of time or reverse the pages of history. That which is of the past must inevitably give way to changing conditions. But I am biologist enough to believe that the past leaves its indelible imprint on the present and, in turn, on the future. I do not believe we will ever re-erect the old combination of Latin, Greek, mathematics, English, one or more modern languages, a science or two and philosophy as the foundation stones on which a liberal education is to be built. Students will continue to study one or more of these subjects, but no one believes now that the average physician of tomorrow is going to be well-grounded in Greek; to be able to use the calculus as a tool; to have read the masterpieces of foreign literatures (not to say anything of those of his own language); to be more than just acquainted with Kant, and at the same time to acquire the scientific and medical training necessary for the practice of his profession as it stands today. This could not be expected unless we had a complete reformation of our educational system, starting with the grade schools.

The old curriculum is gone; it died from the weight of its own prescriptions and from a stifling lack of election of subject matter. But, surely, it had something that was worth keeping and holding to in the drift of our educational outlook. For one thing, it had a well-defined objective; for another, a peculiar method; and for a third, it naturally created an atmosphere of scholarship.

The recognized objective of the old liberal arts education was primarily the training of the mind, the development of the will and the sharpening of one's appreciation of what is beautiful in nature and in art. It had a rigorous discipline and the student who could not think but was forever merely guessing, whose will was supine, who could not control his emotions and who could not appreciate that which was fine in others and in himself, such a student just could not qualify. In training our youth, should not these objectives continue to be the chief values in a "cultural education?"

Many will say that the method of the old school was the glorification and intensification of the old and now much discarded educational trinity—reading, writing and arithmetic. If this is true, the method had at least the value of developing a product that could read, could write and could "figger." On the other hand, it seems to me that the genius of the old educational order lay in a peculiar assumption, namely, that thinking is always thinking no matter what you think about. If you have learned to think about Greek roots or square roots, you can also think about a problem in sociology or psychology, or, as the old school-master would say, about a problem in human conduct; not every field of knowledge had to be sampled. With this assumption, the method employed was merely that of building on what the student already had. Thus, his training continued along certain definite and sustained lines. It was articulated and not disjointed. Continuity of effort was demanded and dissipation of interest was eschewed. In the mad rush for the acquisition of mere information, these principles which seem extraordinarily valid have been relegated into the flotsam and jetsam of a past age.

In contemplating a premedical curriculum, where can we find ground for the implantation of these values? Will the operation of these pedagogic principles provide liberal values in premedical training, and can we put them into effect? The answers to these questions are, in my opinion, all in the affirmative. My first proposition, namely, that a liberal education is one which has as its primary purpose the objective training of the intellect, is something that you must either take or reject; the limitations of this article prevent further elaboraion and discussion. But, in passing, I beg you to compare the old product with the more recent, and to remember too that the colleges, in their very attempt at realignment and reorganization, recognize that something is amiss or wanting. My second proposition, that liberal values so defined can be instilled into the body of the curriculum, demands further development. Immediately, certain practical aspects come up for consideration.

First, there are the explicit demands of the medical schools themselves which must be recognized and provided for,—the minimum requirements for

admissions. Following the lead of the colleges themselves in their requirements for the bachelor's degree, a certain minimum is called for in mathematics and English, doubtless in the hope that this will somehow polish off the student and make up for past deficiencies. And do not overlook the foreign language requirement, demanded for the practical reason that the medical student will have to read scientific and technical articles in German, French, Spanish, Italian or even in Russian, but compromised to the extent of a "reading knowledge" of any one of these. In addition, the student must be adequately prepared, as defined in semester hours, in biology, in chemistry and in physics for the purpose of undertaking the kindred sciences of the preclinical years. If and when there is any time left over, he is invited to choose electives as providing the elements of a "cultural" education,—electives that run the range of the modern curriculum. From a fairly abundant experience, I can assure you that rarely does a "premed" choose such an elective because of any innate interest in it. Rather, he uses it to serve his time or to ease his schedule. In all of these requirements, please note, there is always an end or purpose in view, an end that never seems to center in a study of the subject for its own sake.

Next, we must take into consideration the time element and the numbers involved in medical education. Today it is not uncommon for a young man to approach middle age before he can become established in the practice of medicine and, for every student who is finally admitted to medicine, at least three enter the colleges as premedical students. In the face of all this we now seek to liberalize premedical education! Surely it cannot be done by adding new content.

Granting that the sciences are the main framework of premedical education, do they not offer a proper and probably the best vehicle for a liberal education as defined? The real danger is that the teaching of *pure* science be overlooked and its applications be over-emphasized. In chemistry, we pay too much attention to the needs of the technician and the industrialist and too little to the man who wants to use it as a stepping-stone to something else. We inundate the general student with facts and the refinements of technique and lose sight of theory and interpretation. In biology and physics, we teach much that is impertinent to anyone except the specialist. To achieve extension we are prone to neglect intention. But of all subjects, it seems to me, the sciences offer the greatest opportunity to the student for strict mental discipline. And among the sciences we include mathematics.

But to conceive of the mind as a cold, calculating machine and nothing more leaves us far short of its full capacities. What of the imagination, of insight, of sympathetic understanding? To catch the vision of past generations, the wisdom of the poet and the seer, we must turn to literature. If we cannot inculcate into the student the desire to read the masterpieces of his own literature and to foster this impulse, then we have failed him. But there are other peoples and other literatures with their own genius and their own expressions. To know something of the literature of one of these is of much greater value than to be able to translate, by hook or by crook, a scientific article written

in this tongue. Furthermore, it stands to reason that if the first has been achieved the second can be done.

There is such a thing as much learning and little understanding. The latter comes only with reflection. Reflective thinking is the earmark of a liberal education, and, indeed, it is the faculty by means of which we establish true and eternal values. "Philosophy the Guide of Life,"—it is the best corrective in a disjointed curriculum.

In this discussion, I have made no attempt to be categorical as to the content of an *ideal* premedical program. Recognizing the fact that this is largely determined by the needs and viewpoint of our generation, I merely protest that in seeking liberal values we gain nothing by adding new "-ologies" and new "-isms," new wrinkles, to the curriculum. These values are to be found not so much in what we teach as in how we teach. I submit the proposition that a liberal education is to be sought in the training of the mind in its higher capacities rather than in the acquisition of factual knowledge. If this Association can point the way to achievement of this end in its own program, it will have taken a long step forward in the solution of a problem that is now perplexing the American colleges themselves.

Liberal Arts Background for Medicine*

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Any discussion of the preparation to be desired for admission to a school of medicine should be predicated by an attempt to define the qualities expected in the finished product—the doctor of medicine.

First of all such an individual should have a mastery of the science of medicine and of the application of that science in constructive art.

Secondly such an individual must be a person of culture and refinement commensurate with the highest demands of the society of which he is a part. He must have an education which has prepared him to face the perplexing issues which society presents and to make decisions in accordance with the highest ideals of social welfare. The diagnosis of physical ills often involves an appreciation of social psychology, economics, and governmental procedure.

The minimum requirements for admission to medical schools are sufficient preparation for learning the technical phases of the science of medicine.

The second requirement for a doctor of medicine, if it be met at all, must have its foundations in the undergraduate college in fields of knowledge not directly prerequisite to the technical phases of medical science.

The majority of undergraduate colleges have curricula so arranged that the minimum requirements can be met in two years, certainly so if one or more courses can be carried in a postfreshman summer session.

It is gratifying to note that in 1935 only eleven per cent of the 6,150 entering students had less than three years of college residence. Fifty-two per cent had baccalaureate degrees.

This has resulted from one or two causes. Either the shorter period of preparation is inadequate or the undergraduate colleges are persuading students to remain for a longer time in undergraduate courses.

I count myself fortunate that my college will recommend for entrance to medical schools only those who have completed a bachelor's degree. Our curriculum is so organized that minimum requirements may be met in two years with a little crowding. They may be completed easily in three years. We have consistently resisted any combined course whereby the first year in medicine may be substituted for the fourth year of undergraduate work in the granting of bachelor degrees.

The fourth year in the undergraduate college is just as important to the future Doctor of Medicine as it is for any person who plans to be an integral part in the affairs of society. There is no more reason to make an exception of the medical man than there is for those who plan to enter the teaching profes-

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sion, the business world, or any other profession. The fourth year should have great value in developing maturity in thinking and soundness of judgment. This is especially true if graduation depends not only on an accumulation of credits but a comprehensive examination designed to integrate the fields of knowledge studied and to emphasize the significance of correlated information.

The organization of so called premedical courses, prelaw or pre-anything has no place in the philosophy of liberal education. The liberal arts course should be organized to provide a broad cultural foundation in which prerequisites for professional careers may be included without being directed toward a specific end. Biology, chemistry, physics, and mathematics should be taught not as premedic subjects but rather as integral parts of an educative process designed to give students a cultural background for life. Even engineering which has been regarded as a highly technical profession is asking for a broader background. Pres. Williams of Lehigh says, "In the older days, technical training led through an apprenticeship to a fairly definite professional life, while today, because of increased complexity, fewer and fewer technical graduates find their training a specific preparation for the vocation which they subsequently follow. The demand follows therefore, for more than a training to perform certain operations: it is for an education that affords versatility in the face of changing economic and social conditions. The acme of technical education hereafter will be an equipment for a possible vocation plus an accessory preparation to shift to any of the variants thereof or to its economic correlatives."

I am in sympathy with Dr. Fred C. Zapffe in his statement relative to preparation for admission to medical schools:

"The students who have come to us with a lot of science have been 'trained'. They have been trained like a lot of animals to perform certain tricks. They are not educated. The students should have had a certain amount of science but more work in the humanities, more cultural work, more work in mathematics, in sociology, in philosophy, in psychology."

I should like to register my objection to any implication that science work is not cultural. The answer as to whether work is cultural or not lies in the way it is taught and not in the content of the work. I have known, and so have you, courses in history, art and literature as lacking in cultural values as course in thermodynamics, strength of materials or econometrics.

Fifty years ago physiologists and students of foods were discussing the balanced diet. They figured the value of each food in terms of heat producing units. A certain number of calories properly allocated to proteins, fats, and carbohydrates would give an individual the necessary nourishment for building tissue and maintaining temperature. Today we have not discarded this earlier work but we have found that certain other substances in small amounts are necessary for the proper utilization of this balanced diet. These rather intangible materials we call vitamins.

I wonder if there is not an analogous situation in our academic diet. We have defined a liberal education in terms of kind and quantity of courses taken.

The quality of instruction or personal impress of the instructor is not considered. Given so many credit hours in certain specified courses we declared our student educated "with all the rights and privileges thereunto appertaining." I believe we should say "with all the obligations to society which this knowledge implies."

Undoubtedly the substance we now call vitamins have existed in man's diet from the very beginning. Given a society in close contact with the soil and most of the vitamins will be included in a diet selected with no apparent thought of the chemical nature of its contents. Then comes civilization, refinement, and purification. Polished rice is more to be desired than the unrefined grain with its inelegant husks. But unfortunately for purity loving man a vitamin has been discarded and a disease results.

Time was when the individual student with his instructor studied together and thought together. The influence of the instructor served as a catalytic agent to bring together student and knowledge and continued to help him to assimilate the knowledge into his mental processes.

Organization, refinement, and purification followed with increased numbers, elaborate equipment, and a worship of pure scholarship. The ideal toward which we now drive is the Ph.D. degree. From the time he enters college until the day of his graduation the student is reminded that the attainment of this degree is the summum bonum of life. Intensive scientific training, a dispassionate view of knowledge, knowledge for knowledge's sake, are commendable ends. No end of time is spent to develop scholars but very little to produce educated men. Too often the vitamins are boiled to death and we have an academic runt with intellectual rickets, a storehouse of knowledge, a few well mastered academic tricks but no ability to meet men or look upon their problems with understanding sympathy. Certainly the man who enters medicine must have a capacity for appreciating life. And there is no study required of him before or after entering medical school which cannot be taught with this relationship in mind. We need teachers who can vitalize and humanize the processes of learning, who are first of all teachers and secondly investigators.

I am somewhat in sympathy with that definition which claims that education is all that is left after one has forgotten the things learned in school. There is no need to look back to the good old days when Mark Hopkins and his student were separated only by a log. That log has long since been sawed into boards of education, trustees, examiners, etc. And poor Mark sees the student only between committee meetings.

That we have today students who are trained but not educated is a sad commentary on our college teaching. And I fear some of that same fault has crept into our professional schools. It evidences itself in these high degrees of specialization which are not good for the professions nor the public which they serve.

Academic vitamins like those in foods may sometimes be found in the husks and discards of our educational system. I am inclined to believe that extra-curricular organizations and athletics may some day be recognized as the spinach

and carrots of a complete education. In our frenzy for knowledge pure and undefiled we have fought to eliminate them. Had we spent as much time and energy trying to find uses for them we might today be enjoying a much happier relationship. This statement is made not without knowledge of the questioned values of both and by one who speaks not as an amateur but from twenty years experience as a dirt farmer in both.

Many branches of knowledge which a few years ago were considered essential subjects in every cultural curriculum have almost completely disappeared. In many cases their passing is directly traceable to poor teaching. They have lost life contacts. Poor teaching could survive longer under the old college requirement system. And many of us who today look with pride on the broad scope of our undergraduate training fail to consider the fact that the course we followed was not necessarily of our own choosing. We lived in a day when the advice of our elders was given in a distinctly imperative mood and not in a spineless optative.

The decline of interest in the humanities has reflected itself in great increase in the enrollment in the sciences. Prosperity seems to have caused many teachers of science to forget the mission of their subjects as integral parts of a cultural background and to commit the error of training in specific skills. The number of dry-as-bone science courses is on the increase. And the number of those who resent advances of the social sciences compares with the old teachers of Latin and Greek who predicted ruin in the acceptance of the natural sciences.

It is this type of teaching which calls forth the criticism that students in science are trained but not educated. There are no subjects in our curricula which lend themselves more admirably to the cultural approach. Lack of interest on the part of the students frequently results from the instructor's attitude that the subject matter involved is a self-sufficient mental pabulum and requires no vitamins.

One of the most remarkable developments of recent years is the increased emphasis on the social sciences. They are breaking into the curriculum just as natural sciences did during the last half century. And their coming is being resisted by the sciences already recognized. Their claim for student interest lies in the fact that they are tied up with life. A knowledge in this field is becoming increasingly necessary for any who will deal with complexities of human relations.

I am one of those whose early reactions to objective tests was most unfriendly. I have come to appreciate the medical aptitude test. However, I should like to see it extended to include material not directly prerequisite to medical training. This might include questions designed to inquire into the student's general cultural background. Inclusion of such questions would very soon indicate to the student and his college the type of preparation desired by medical schools.

The statistics of admission to medical schools seem to indicate very clearly that the undergraduate college is assuming more responsibility for its products

by limiting the number of applications below the level of graduation. There are still some of us who hope the day may come when college graduation will be an accepted prerequisite for any profession just as high school graduation is now required for college entrance.

In conclusion: As one engaged in preparing students for medical schools I should like:

1. No reduction of the minimum requirements.
2. Preference in admission given to graduates.
3. Vitalizing and humanizing of college teaching to the end that the term Liberal Arts may have a real meaning.
4. Expansion of medical aptitude tests to include nontechnical cultural background.

DISCUSSION

On papers of Dr. Reinke and Dr. Gilmore

DR. ROBERT WILSON (Medical College of the State of South Carolina): What type of education is of greatest value and what should be the specific content, are questions which have been discussed since Aristotle wrote the "Politics," and we may well wonder if we shall ever reach finality.

I have always been in fullest sympathy with the attitude expressed by Dr. Reinke and Dr. Gilmore as to the superior value of a liberal education in preparation for the study of medicine. I do not think that any better or more concise statement of the objectives of education has been made than is contained in Huxley's description of a man of liberal education: "One who knows something of everything and everything of something; who is able to wield the sledge hammers as well as spin the gossamers of the mind; who has learned to appreciate all that is beautiful in nature and in art. Thus, briefly, is set forth the ideals of mental training and mental culture."

All of us may not be able to wield mental sledge hammers nor possess the delicacy of thought necessary to spin the gossamers of the mind, but whatever our native ability, it may be improved by education if the teacher understands the real objectives which he is striving for, not merely to impart information but to stimulate to better use the facilities of imagination and reasoning. Much, therefore, depends on the teacher. The subject matter is not of supreme importance. The principles of deduction and induction may be learned from Greek or from history as well as from mathematics and biology.

Whether we should require a collegiate degree may be subject to question. I have been an advocate of the college degree as a prerequisite for medical training, but an analysis of the accomplishments of my students reveals that many students who have spent only two or three years in college have done better work than those who have the arts or science degree. This is rather disappointing. The explanation, however, is simple, and a little thought leads to the conclusion that the weakness does not inhere in the degree but in the students themselves and in their teachers. The higher grade two and three year students would probably have done better still had they pursued the full course with the same degree of earnestness manifested in the first two or three years.

The aptitude test, I believe, is one of the best guides toward a determination of the extent to which the student has availed himself, or of his ability to avail himself, of the opportunities which the college has afforded, regardless of the time he has spent

in college; whether he has simply drifted through or whether he has applied himself earnestly and conscientiously and, consequently, whether he is prepared to enter the study of medicine with an adequately trained as well as with a well stored mind.

DR. S. I. KORNHAUSER (University of Louisville): In regard to Professor Gilmore's paper: the answer to the students who demand that the college of liberal arts give them what they wish. I talk to many premedical students, and they want colleges of liberal arts to give them first year and second year medical subjects, and the colleges respond by giving them. They give human anatomy in colleges. They give mammalian physiology, histology and embryology, medical bacteriology and physiological chemistry, so that when the student comes to the medical school he repeats those subjects in his first years, to a large extent.

These students very often do not do as well as students who have not had these subjects previously. What I feel is more important is that they have missed much of the liberal education which they should have had in college. That is, in biology they often miss the fundamental principles, whereas they may know a few things about the human skeleton. The colleges are not doing the right thing by answering the demands of the students to take these medical courses when they give them in the college of liberal arts.

DR. EDWARD S. THORPE, JR. (University of Pennsylvania): Some years ago, I was guilty of a paper read before this Association, in which I attempted to analyze the results achieved by students who entered our medical school, some of whom had had a considerable amount of college training in science, and some who had taken a major share of their work in other subjects, such as English, languages, history, and so forth. I was led to make this study because so many young men who applied for admission to the medical school tried to impress me with the number of courses in science which they had taken. Later, some of these men who had taken many courses in science did not do very well in our medical school—even in anatomy and chemistry.

As a result of that statistical analysis of graduates of our school, I found that those who had completed the minimum number of required courses in science did just as well as those who had had practically all of their college training in science.

Since that time, my paper has been variously interpreted. However, if I remember the paper correctly, I recall that I said in conclusion that all it proved was that a good student, properly taught, would prove to be a good student in the medical school—if and when we could catch him.

For that reason, I am delighted to hear these two papers this morning, particularly the paper of Dr. Reinke, which I consider to be a masterpiece.

REVEREND ALPHONSE M. SCHWITALLA (St. Louis University): I am certain that there is not a person in this audience who would not want to discuss both these papers, but I want to talk from the point of the attitude of the colleges toward the matters we are discussing here.

I have heard many discussions of Dr. Zapffe's paper before the Association of American Medical Colleges in New York last spring. I think Dr. Zapffe has done a tremendous service to all the medical schools by what he has said, his insistence on a liberal education as a preparation for medicine, and especially the plea he made for breaking away from qualitative evaluations of the prerequisites for medicine.

But, unfortunately, Dr. Zapffe's paper has had two effects on the colleges. His remarks have been misinterpreted as meaning first of all, that medical educators regard the medical curriculum as not conferring a liberal education.

I think one of the first things we ought to struggle against in dealing with colleges is to disabuse them of the thought that the medical curriculum is not a liberal curricu-

lum. The content in liberalizing effects of the medical curriculum is, to my mind, one of the most outstanding and strongest features of medical education, and to regard medical education purely and simply as technical education (I am not using the word "professional" advisedly, because some of the colleges regard the medical curriculum as a technical curriculum and not a professional curriculum), and to allow that to continue is, I think, one of the great harms that may come from a discussion of this question with the colleges.

The second thought, in connection with Dr. Zapffe's remarks which I have come across, is this: Some of the deans are definitely of the opinion that this Association has put itself on record as being against anything like minimum requirements for admission to schools of medicine. As a result, I have had at least two letters—and I think I could dig out a few more—that come to my mind on the spur of the moment, in which deans made the plea that this student or the other student should be admitted to the medical school even though he did not have courses in chemistry or biology. They want the medical schools to supply the education which this particular student has not had.

I happened to overhear a discussion between three deans of colleges recently, in which they congratulated themselves that this Association, and the Council also, had at last broken away from what they regarded as a perfectly foolish attitude of requiring eight hours in inorganic chemistry and four hours in organic chemistry as prerequisites for admission to medical colleges. It is not the four hours or the eight hours required, but it would be unthinkable for some of the colleges, not seeing this, to admit a student to the school without chemistry, who had not had exposure to the anatomic theory, or a conception of malocclusion, and a thousand and one other things.

It seems to me that if we can come to the idea that we are not going to stress the twelve hours but that we are going to stress adequate preparation in chemistry—whatever that adequate preparation means is partly for the colleges to determine—it is very essential that a student coming to a school of medicine be better prepared in chemistry than he has been in the past, in order to carry the great responsibilities of this curriculum.

Secondly, to come back to my first thought for just a moment, it seems to me the colleges must be disabused of the thought that all liberal education stops the moment a student comes to a school of medicine. Somehow or other they must be made aware of the fact that when a student does come to a school of medicine we assume a certain amount of liberal education, but the medical colleges themselves will carry on that education progressively.

DR. FRED C. ZAPFFE: I am going to break a rule of many years' standing by entering into a discussion, and I do so only because my name has been mentioned rather often.

I should like to have Professor Gilmore, or anyone else, produce anything I have written in which I have said that science is not culture. Furthermore, I should also like to see any printed statement of mine in which I gave out even the faintest hint that the minimum was to be reduced, or that I did not regard professional education as a continuation of a liberal education. I have repeatedly and forcefully stressed the need for "adequate" preparation for the study of medicine.

I have said repeatedly that the students who come into medical school with too much science in college do not carry on as well in the medical school as do those who come with less science. For nine years this Association has been studying the accomplishment of students. True, it is a purely statistical study, and if the report comes in that a B.S. was dropped, or an A.B. was in the upper third, that is all there is to it. Never, in any one of those nine years, has the accomplishment of students with a B.S. degree in any way equaled that of the students who came with an A.B. degree. In fact, the B.S. students have been excelled in accomplishment by the two-year students.

I appreciate the fact that the students with two years of college work have been very carefully selected. It was not a hit-and-miss selection. It was a most careful selection. Therefore, it is hardly fair to say that all students with only two years of college work would have made the same record, because that would be untrue. But, it is true that too much science seems to get the student's mind off a certain track.

I have tried to be most specific in what I have written and what I have said. I do not doubt for a moment that the men who wrote to Father Schwitalla said exactly what he said they did, but I do say it is putting an interpretation on my statements that is not warranted if one reads these statements carefully.

There is no "let down;" there is no stopping of liberal education when you enter the medical school. We are not letting down our curriculum. We are not dropping off the requirement in chemistry or any other hitherto required subject. Our constitution is most specific in the requirement of English, physics, biology and chemistry. We no longer say eight hours or four hours. We are leaving that to the arts colleges, for the same reason that we got away from the requirement of fifteen units of high school work because we felt we could safely leave the high school work evaluation to the colleges. They are doing a good job of it. Why should we do it?

The requirement is specific, in so far as time goes as measured by years or course content, not by hours. I think it is wrong to evaluate on the basis of hours, just as no one is able to evaluate what a man really knows by giving him a figure of 90, 80, 70 or 60. He either does or he does not know; he is either satisfactory or unsatisfactory.

My main reason for speaking is to make clear that these citations of statements I am supposed to have made cannot be borne out to be true if laid side by side with what is printed.

Case Method and Clerkship in Teaching Pathology

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The idea that students can come to understand disease by studying cases and by participating in departmental activities has far wider acceptance among teachers of clinical medicine than among teachers of pathology. It seems well worth while, therefore, to make some remarks on this idea as applied to pathology, and to describe how the idea has been applied for several years in the Department of Pathology of Duke University Medical School. In advocating for pathology a full utilization of the methods of clinical instruction, there is no wish to abolish time tried means of instruction in pathology. There is merely a wish that a definite allotment of time be made for adequate case work. An orderly presentation of the subject of pathology by lectures, demonstrations and collections of slides is surely essential. The idea of the case method is old; it is desired to emphasize the degree to which it can be used. The idea of pathology clerks is not entirely new; it is desired to emphasize the degree to which students can be so utilized.

The adoption of the case method and of clerkships in pathology, past and present, here and abroad, varies greatly. The teaching of pathology as a part of clinical medicine, before pathology developed so much autonomy, had advantages. Disease was more naturally studied from the point of view of the individual. However, instruction in morphology must have been sketchy and there is no suggestion that any case system of analysis was carried out. For example,[1] in 1880 at the College of Physicians and Surgeons in New York,

"The didactic instruction in pathology was given by the chair of practice of medicine, and covered the pathology of those diseases lectured on in the annual course, illustrated, at times, by the demonstration of fresh and preserved specimens . . . There was no obligatory instruction in laboratory work or post-mortems."

Councilman apparently used a case system to some extent:[2] "The afternoons of December were given to pathological conferences. Each section was given the organs of an autopsy. These were divided among them, and they examined, weighed, measured and described them. They made the necessary microscopic, chemical and bacteriological examinations under some supervision, and were given certain articles to read in connection with the work. They looked up the clinical history and from all the data which they could obtain the case was written up. When they had gotten what they could in this way, the material which they had collected was presented to an instructor who went

1. Stewart, J. Clark: The Relation of the Study of Pathology to the Higher Medical Education. *J. A. M. A.* 23: 741, 1894.
2. Councilman, W. T.: The Course in Pathology at the Harvard Medical School. *Boston M. & S. J.* 142: 558, 1900.

over it with them, cut out and expanded and made the whole homogeneous. The case was then rewritten by one man selected by the section. The case was then presented to the class by the section, and the organs and microscopic sections demonstrated."

Dodson, in 1915, wrote regarding the pedagogics of pathology:[3] "Of especial educational value is the study of a few cases, seen at autopsy, exhaustively, by every feasible method of examination, as contrasted with a second-hand survey of the whole field of pathologic anatomy by lecture, text-book and recitation."

Today the attendance of students at necropsies is required almost everywhere. But mere attendance is not enough. In many schools groups of students report on cases. But such group work is not enough unless it is sufficiently independent and unless the number of students in a group is sufficiently small. In many schools, stress is laid on special pathology by study of large collections of hearts, or kidneys, or lungs showing various lesions, with the result that students often emerge from the course with no realization that bacterial endocarditis and acute nephritis are likely to occur in the same individual. In some schools, major emphasis, even exclusive emphasis, is placed on loan collections of slides not correlated with disease in the individual as a whole, sometimes not even with diseased gross organs. Such histopathological study of isolated slides can develop expert "spotters" of slides, but it can not develop an understanding of disease in individual human beings, which the student of medicine needs most of all. Unless the student obtains in the pathology department an idea of the whole course of disease in an individual, where will he obtain it? In the clinical years there is usually neither time nor interest to see the case through to the study of microscopic details, or even of significant features in the gross organs.

Success with the case system and clerkship in clinical medicine is due to the fact that the student learns inductively. By taking the history and by performing the physical examination and laboratory work he becomes exceedingly familiar with a diseased human being. Unconsciously the isolated facts which he has obtained become correlated and he is able to make some simple generalizations. Generalizations obtained by the student in this way are far more valuable to him than the same generalizations presented to him by a teacher in a lecture or clinical demonstration. In 1900 a paper by Walter B. Cannon[4] on "The Case System in Medicine" was published in which "the idea of using printed records of cases as centres of interest in studying medicine" was developed. Commenting on this idea in a paper entitled "The Inductive Method Applied to Medicine" President Eliot[5] of Harvard remarked that the student "got his facts from recorded cases, and then studied in those recorded cases the induced generalization of principle . . . The method of medical

3. Dodson, J. M.: The Pedagogics of Pathology. *Science*, 42: 773, 1915.
4. Cannon, W. B.: The Case System in Medicine. *Boston M. & S. J.* 142: 563, 1900.
5. Eliot, C. W.: The Inductive Method Applied to Medicine. *Boston M. & S. J.* 142: 557, 1900.

teaching which has been talked about is after all nothing peculiar to medicine. It is simply the universal effort in education rightly directed."

It is reasonable to assume that success will follow the use of the same pedagogically correct inductive methods in teaching pathology.

Probably, the ideal arrangement for learning pathology is to spend some years in a well-constituted department of pathology, during which time clinical correlation, reading and research, accompany the thorough analysis of autopsy cases and of pathological specimens removed surgically. Most medical students cannot devote this amount of time to the study of pathology. But some of the value of the longer period of training can be obtained in the regular course in pathology if the student is given certain responsibilities and privileges.

How can the case system with participation of students in departmental activities be applied during the regular second year course?

The plan to be described has been used in the pathology department of Duke University Medical School over a period of years and has apparently met with success.

At the beginning of the course, the class is divided into groups of three which follow autopsies in rotation. With three members in a group a division of duties can be obtained. While the postmortem is in progress, one member abstracts the clinical history, which is available in the autopsy room, and takes notes for the convenience of his group and of the member of the staff who is performing the autopsy. It has not been found practicable or advisable to allow the students to perform the major part of autopsies. The second member assists in the removal of the organs. He often can perform a considerable part of the work under supervision, after the significant features have been noted by the staff member and demonstrated to the clinicians who are in attendance. However, autopsy technique per se is not stressed in comparison with thorough case analysis. The third member obtains smears, bacteriological material, etc., after the bacteriologist has obtained his specimens.

Independence of thought is secured by having the group write out a clinical abstract, autopsy protocol and provisional anatomical diagnosis and submit these to the staff member who performed the autopsy. These must be submitted within a few hours of the completion of the postmortem, and before the staff member's records have been turned in to the departmental record room. In similar fashion, students write their microscopic notes and revised anatomical diagnosis and submit them before the presentation of the case at the staff microscopic conference.

Finally, when the protocol is checked and returned, the group has a complete story of the progress of disease in an individual. If photographs of organs are made, students can obtain duplicate prints for illustrating their records. The writing of records starts at the beginning of the course. Since students will not know the technical terms at this time, they are encouraged to use purely objective descriptive terms both in protocols and diagnoses, terms

which they might apply to the description of a familiar object, such as a chair. Students aid in the washing and cutting of blocks of tissue. They do not usually perform the technical work of cutting and staining sections, but do write independent microscopic notes of the sections from each case. Students attend the staff conferences, both gross and microscopic, at which their cases are presented and studied. In addition to the advantage to the student of thus following every step, he not infrequently supplies some pertinent bit of information from the clinical history or autopsy findings which a member of the house staff may have overlooked. The more interesting cases are presented to the class by the group at weekly student clinical pathological conferences.

The following directions on mimeographed sheets are issued to each student at the beginning of the year:

THE STUDY OF THE CURRENT AUTOPSIES

During the course in pathology, each student will have the opportunity and the duty of studying completely at least two cases which come to autopsy. He should use every method available to learn about the development, progress, and culmination of disease. To this end he must study:

1. All antemortem data about the patient.
2. The gross appearance of the body and its organs.
3. Any smears, fresh preparations or cultures made from the lesions.
4. All microscopic sections.

He should summarize his observations and opinions by writing anatomical diagnoses which he should be prepared to defend.

The work on current autopsies takes precedence over all other work during the course in pathology, as far as the assigned group is concerned.

It is expected that each student will follow his case as thoroughly as though he were in complete charge of it.

STUDENT GROUPS ALWAYS ON CALL: Students will study current autopsies in groups of three, all three to be held responsible for all phases of the case. Groups will follow autopsies in rotation; and each group will keep itself informed as to when its turn comes. One member of each group will register his telephone number so that the group may be called.

PATHOLOGICAL CLERKS ASSIST AT POST-MORTEM: The group assists in the performance of the autopsy as the staff member may direct, and takes every opportunity to learn autopsy methods, such as preparation of organs, removal of skull cap and brain, etc. During the autopsy, the "scribe" of the group prepares a brief abstract of the clinical history, begins the protocol, and takes down data from the staff member for the convenience of the latter.

PROTOCOL AND DIAGNOSIS PREPARED IMMEDIATELY: After the autopsy is finished, the group at once writes on the proper blank a provisional anatomical diagnosis (to be signed by all three members) and completes the protocol. The protocol is to present a verbal picture of the appearance of the body and its organs, and is to contain accurate statements as to the position and relationships of lesions, and as to the size, color and consistency of organs and lesions. Sheets with the printed autopsy form are available and are most helpful in writing the protocol.

GROUP REPORTS INSCRIBED BY STAFF MEMBER: The clinical abstract, protocol and diagnosis are presented, when completed, to a staff member for initialing and dating (with the hour). Diagnosis and protocol are to be presented the same day on which the autopsy is done, and before the time when the doctor hands in his data for typing.

PREPARING BLOCKS FOR SECTIONING: The group washes the Zenker-fixed tissue if the staff member desires, and inquires of him when he plans to cut his blocks, that the members may be present and make a list of blocks cut, and place request for extra, unstained sections.

GROSS CONFERENCE: The group will inquire of the doctor who performs the autopsy when the organs will be presented at gross conference. The group will attend the gross conference until the dictation of notes on its case is finished.

MICROSCOPIC SECTIONS: The group will inform itself as to when the sections are stained, and will borrow them from the doctor, and return them whenever they are not actually being examined. Students may have extra blocks cut, with the permission of the doctor. Extra unstained sections are to be stained by the students as they may desire or as the staff member may direct. (Staining sets may be obtained from the chief technician.) In microscopic study students will constantly re-examine the preserved organs for orientation and comparison.

MICROSCOPIC CONFERENCE: The group will inquire of the doctor as to when he will present the case at conference. The members write (1) microscopical notes and (2) a revised provisional anatomical diagnosis on a new blank. These are given to a staff member at the microscopic conference immediately before the presentation of the case. The group is to be present while its case is being presented and until the dictation of the note regarding it is finished. The revised provisional anatomical diagnosis will be examined by a staff member at the conference.

STUDENTS THINK AND DIAGNOSE FOR THEMSELVES: No staff member is obligated to give aid to students in the preparation of cases. It is hoped that the student will present his independent observations and opinions in the group report.

REPORTS MUST BE PROMPT: A case will not be credited to a group if the various reports are presented after the time specified.

STUDENT CLINICAL-PATHOLOGICAL CONFERENCES: The most interesting cases will be presented at student clinical-pathological conferences.

PURPOSE OF THE ABOVE REQUIREMENTS: The above provisions are made not to outline requirements to pass a course but to provide means by which every student can pursue to best advantage the study of the biological course of disease from beginning to end with, of course, emphasis on the pathological anatomical and pathological physiological aspects of the case. The student of pathology becomes a part of the department of pathology while he is taking the required course.

Student groups are invited to continue to follow autopsies in a similar manner after they have completed their two required cases.

The application of the case method to preserved material is essentially that used by W. G. MacCallum of Johns Hopkins University. Following a tour of study and inspection of medical schools of the United States, Ch. Oberling[6]

6. Oberling, Ch.: Impressions d'un voyage d'études aux Etats-Unis d'Amérique. *La Presse Médicale*, 43: 1737, 1935.

wrote in *La Presse Medicale,* in 1935, that he was much impressed by the method as used by MacCallum of preserving the organs of the individual in one container and studying them as a case, often with the clinical history, rather than as isolated lesions. Continuing, Oberling remarked that the idea of the correlation of the morbid processes, of the interaction in the various organs and tissues was automatically inculcated into the minds of the students and that there is without doubt an enormous advantage in this sort of instruction.

In the department of pathology of Duke Medical School the students bring their microscopes to the record room of the pathology department and study the filed slides, protocols and clinical abstracts corresponding to the preserved organs. They, thus, have at their disposal a large number of autopsied cases illustrating every sort of disease as it manifests itself in human beings. Groups of cases are analyzed and compared, and the student learns much clinical medicine in addition to morbid morphology and histopathology.

COMMENT: The ability of the student to utilize the case system and to be a pathology clerk may be questioned. The best answer is a comparison with the clinical clerk. The latter has assumed a valuable rôle in many clinics, and surely has a better and maturer grasp of clinical medicine than the student taught only by lectures or demonstrations. He is not able to understand his cases as completely as his teachers, but he is helped in that direction. If the student of pathology has had sufficient preparation in histology, he can recognize the abnormal in his sections by the method of comparison.

In taking part in the machinery of the department the student is of real aid in the actual performance of the autopsy, in the notation of data, in the writing of protocols which can often be used, with some editing, by the staff member who performed the autopsy. The student may gather together literature which may be of distinct aid to the staff member. In return for these services, the student learns the value and limitations of autopsies in studying disease; and becomes acquainted with the methods of morphology, histology, and bacteriology in studying disease.

A word should be said about the relationship of the case method to the other components of a course in pathology. There need not be a graduated scheme of approach in analyzing cases. The student is presented in his first case with numerous problems which he cannot understand. It is the function of the remainder of the course,—lectures, demonstrations, discussions, etc.—, to solve the problems which are presented by disease occurring in human beings. As a practical point, it is well to have the instruction in pathology occupy a fairly concentrated block of time without many other courses running concurrently. This is important, because to attend autopsies occurring at various times students will have to leave their regular work; and it is naturally unfair to subtract so much time from the regular work of other courses.

There is an implication in the use of the case method which all pathologists may not accept. Emphasis is automatically placed on morbid anatomy and histology. For those greatly impressed with the importance of experimental pathology, chemical pathology and immunology, there will be left a less amount of time in the regular course for these phases of the subject. Regarding this matter, it is valuable to consider a statement by Goodpasture.[7]

"In what I have said I intend to express the judgment that morbid anatomy as a discipline for undergraduate medical students can justify the allotment of all the time in the curriculum given to it in our modern medical schools, and more, without the necessity of dissipating any of its hours upon the demonstration of animal experiments or requiring the use of any so-called experimental procedure other than those which may be utilized in aiding observation of the phenomena presented by the dead body."

The methods advocated will not be successful in a department the members of which are so completely engrossed in various forms of research that students are regarded as nuisances and autopsies as interruptions in lines of research thought. Departments of pathology can become such "pure research" institutes that the teaching of information regarding common important diseases may suffer. It is hard on the student when teaching becomes a minor activity of a department which is really functioning as a research institute.

A full utilization of the case method naturally requires that the medical school be in the closest relationship with a teaching hospital.

There are numerous advantages in the emphasis of case method and clerkship in the general medical development of the student. It gives the student a correlated concept of disease. It gives him the normal progression in learning: from clinical course, to gross pathology, to histopathology. It causes the student to consider pathological physiology as well as pathological morphology. It accelerates the development of the student by allowing him to study the whole course of disease in an individual as a second year student rather than waiting until the time when he is a third year student. It makes the student independent in thinking. It keeps pathology a practical subject for the student. And possibly, most important of all, it gives the student an understanding of what a department of pathology is for and what it is trying to do.

SUMMARY:

The success with the case system and clerkship in the teaching of clinical medicine suggests that a similar success would follow the wider use of the same methods applied to the teaching of pathology. It is possible to give the

7. Goodpasture, E. W.: The Use of Experimental Procedures in Teaching Pathology. *Southern M. J.* 25: 991. 1932.

student in the regular course in pathology a complete idea of disease occurring in an individual if arrangements are made for him to study autopsy cases in a complete fashion with due regard for the clinical course and the histopathologic and other findings. The student can become a temporary member of the department and can engage in the staff conferences on the cases he follows. Such active participation in the department with thorough analysis of cases allows the student to learn inductively, gives him a practical view of pathology, lets him deal with disease in the individual in his second rather than in his third year, stimulates independent thought and gives him a concept of the function of a pathological department.

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Joint Meeting Held

A joint meeting of the Executive Council of the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association was held in Chicago, February 14, with all the representatives from both groups present.

The discussion was entirely informal. It included consideration of the teaching on syphilis and gonorrhea in medical schools, which is believed to be inadequate; the admission of cases of syphilis and gonorrhea by hospitals, which, on the whole, now refuse such admission; the establishment of venereal disease clinics by the Federal Government; the responsibilities of the profession of medicine for the treatment of syphilis and gonorrhea; the payment of physicians who give service in venereal disease clinics in the outpatient departments of hospitals and the supervision of such departments by specialists in this field; the education of physicians in physical therapy to the end that departments of physical therapy can be established in all hospitals and medical schools. The need for such departments was stressed and the lack of them was pointed out; on the other hand, the opportunities for acquiring such special training are all too few at the moment to insure an adequate supply of physical therapists.

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Applicants for Admission to Medical Schools in 1936

The study of applicants is almost completed. A complete report thereon will be published in an early issue of the JOURNAL.

It is significant that there were about 5 per cent fewer applicants in 1936 than in 1935; the number of applications made remained virtually the same—an increase of 12 applications in 1936 over 1935. In 1933, 62.1 per cent of all applicants were accepted; in 1936, only 53 per cent were accepted. Of the number of applicants accepted, 8.7 per cent did not enroll, which is about the usual percentage for each year. Therefore, 14.3 per cent fewer acceptances were reported in 1936 than in 1933.

The largest freshman class reported on at the end of the year (this figure always is less than the number enrolled because of early withdrawals which are not included in the report made at the end of the year) was 6,650 in 1934. The number reported as having enrolled for the 1936 freshman class is 5,906, a decrese of 11.2 per cent from the number of freshmen reported on at the end of the academic year 1934-1935. Allowing for the usual number of withdrawals, it may be said that the 1936-1937 freshman class will have fallen at least 13 per cent below the 1934-1935 class.

Despite the fact that improvement in business always detracts from the desire to enter a professional school, these figures definitely show that greater care is being exercised in the selection of students which should be reflected in the accomplishment of the present freshman class.

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School of Medical Sciences

The Council on Medical Education and Hospitals of the American Medical Association has made the pronouncement that beginning in 1939 it will inspect and approve or disap-

prove, as findings may warrant, schools now referred to as "two year schools of medicine" issuing a separate list of approved schools to be designated as "school of medical sciences." The acceptance of students from such schools who may wish to transfer to a medical school (four years) is left to the discretion of these schools. This refers especially to the acceptance of courses involving the use of clinical material.

The two year school of the University of Saskatchewan, Canada (the only two year school in Canada) has long been known as the Faculty of Medical Sciences.

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Conference on Medical Education

At the call of Dr. E. S. Ryerson, president of the Association of American Medical Colleges, a conference was held in Chicago, February 14, 1937, which was attended by representatives of organizations which are interested in medical education.

Present were Dr. Chas. Gordon Heyd, president American Medical Association; Dr. J. N. Baker and Dr. J. W. Bowers, president and president-elect, respectively, Federation of State Medical Boards; Dr. Ray Lyman Wilbur, chairman, and Dr. Frederick Washburne, member, Council on Medical Education and Hospitals, American Medical Association; Dr. N. W. Faxon, American Hospital Association (representing Dr. Claude W. Munger, president of that association); Rev. A. M. Schwitalla, president, Catholic Hospital Association; Dr. Louis B. Wilson, president, and Dr. W. C. Rappleye, chairman, Committee on Standards, Advisory Board on Medical Specialties; Dr. E. S. Ryerson, president, and Dr. Fred C. Zapffe, secretary, Association of American Medical Colleges.

The topics discussed were: (1) The training and certification of specialists and the part played in this by the medical colleges and by the hospitals; (2) better coordination between licensure and medical education; (3) better coordination between the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges; (4) a better coordination between the hospitals and the medical schools especially with regard to the appointment and training of interns; (5) the effect on the hospitals of the regulations for qualification of specialists.

The whole problem of coordination was discussed by the five national groups represented, viz: the profession at large, the specialists, those connected with medical education, those connected with licensure and those connected with hospitals and their administration.

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Deficiencies in Education

In an address delivered at the Congress on Medical Education, and Licensure, held in Chicago, February 15 and 16, 1937, Dr. Ray Lyman Wilbur stressed that medical students are still deficient in adequate training in those subjects that have to do with our social and economic structure. He said that the specific requirements are held at such a level that only the exceptional student gets that training in language, history, psychology, economics, biology, chemistry and physics that is desirable. The junior college period is too short for an adequate preparation for the medical course. A longer preparation, with a required and supervised intern year is needed to insure a medical profession that knows its job and keeps up to date with all its responsibilities.

Dr. Wilbur also stated that our medical schools still for the most part endeavor to impart too large a body of information to the medical student. There is an aim to be inclu-

sive rather than selective in presenting the vast knowledge of the medical world. There is a specific need to coordinate and unify the instruction of the medical student so that such a disease as syphilis, for instance, may be studied in all its aspects rather than handled by a single clinic.

With which there can only be perfect agreement. It is important that these points be stressed and emphasized repeatedly in order to insure action by arts colleges, medical schools and teachers. Progress is being made but it is a slow, difficult job to upset established procedures even though they are out-moded and virtually not apropos to existing conditions. The needed changes can be made and they should be made if education in general and medical education in particular are to remain "in step."

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Psychobiology

In his daily work the general practitioner meets many psychiatric problems, some as complications of organic pathology, others which are determined by the personality or difficulties in the environment. These patients are usually recognized as worthy of careful attention so that most physicians make a whole hearted, honest effort to treat them. If the physician has the natural gift for handling complex human problems, together with the necessary energy and patience, his success will soon be widespread because of these qualities. He is a happy alternative to the quacks and cults who offer spurious but attractively gilded "cures" to the patient who goes about from one physician to another in the earnest quest for someone who "understands" him. It is essential that more members of the medical profession learn to deal systematically with these disorders. The apprenticeship system is one of the best ways to acquire an effective approach, for the student of a great clinician learns by precept and example to consider the personality as well as the organic pathology of the patient. The general practitioner who practices in the same community over a long period of time also learns through sheer necessity the advantage of showing a keen interest in the patient as a sick person as well as merely treating him as an "interesting case."

It would be a boon if the methods intuitively adopted by the master clinicians could be formally transmitted to students, but the art of medicine eludes detailed description. While there are many essays and proverbs giving hints upon the art of treating personality disorders, there has been, until recently, no generally accepted teaching which makes clear systematic methods of examination and treatment that are useful to the general practitioner. In the past the academic psychologies have had little relation to clinical problems, so that medical men were forced to explore the field of personality disorders independently. To add to the difficulty, many of these pioneer physicians employed the technical language of the older psychologies and psychiatry, often with altered meanings, thus bringing more confusion to an already obscure field. Fortunately, however, the actual practice of many of these physicians was superior to their theories and may, in fact, have had very little relation to it.

The accumulated results of many years of observation and practice by conservative physicians who have concerned themselves with the problems of personality disorders are available to the medical profession at large. From this large clinical foundation sound concepts are being derived which are guideposts to a commonsense, scientific management of the personality disorders. Because these concepts grow out of actual practice, they are free from slavish adher-

ence to a vocabulary which is foreign to every-day practice, and free from academic distinctions arising from arm-chair philosophy. The aim of this practical method is to treat the patient as an individual in whom many factors are at work and that each factor should be given the attention merited by its importance. The multiplicity of factors can best be evaluated by a careful systematic survey, in which an attempt is made to improve the patient's assets, as well as to eradicate his difficulties. The nature of the assets and difficulties are described in terms of every-day usage which are common to both the physician and his patient so that real issues are not obscured by a veil of words. This planned inquiry into the life history of the patient, reviewing with him his endowment, abilities, handicaps, occupation and interests, relations to members of his family and friends, helps both the patient and the physician to understand his illness. It is possible to describe the essential structure of the illness with sufficient clarity to make it as definite a clinical entity as those given in organic pathology. With this understanding the patient and the physician can plan together such treatment procedures as are suggested by the formulation of the difficulties of the case itself, for there are no rule-of-thumb procedures in psychiatric treatment. Each patient is regarded as a distinct individual who is suffering from maladjustment either within himself or in relation to his environment. It is believed that he has become maladjusted because of the gradual cumulative result of unhealthy reactions to the demands made by the environment. Therefore all factors which make up the individual are studied: somatogenic, neurogenic, exogenic, psychogenic and constitutional, in order to understand and treat the individual who is reacting. Special emphasis is given to the study of the immediate situation and problems it presents, although the motivations from the past and the goals that lie in the future are not neglected.

The methods outlined above are being taught in more medical schools each year. This middle-of-the-road, conservative approach has made studies of the nature of mental disorders productive and fascinating, with the result that they can be presented as a living subject with outstanding relations not only to general medicine but to the social problems of every day life. This viewpoint has resulted in a departure from the old descriptive type of psychiatry to the present day genetic-dynamic concepts in which we study the total organism reacting to a total situation, not rigid schemes for classification of the mental disorders.

The student is led by direct contact with the patient to study his life situations and reactions and encouraged to formulate interpretations which can be utilized to understand and modify the adaptation of the individual. The students now realize that a fundamental knowledge of psychiatry is within easy reach, and not a mysterious specialty beyond the understanding of the medical man. They recognize that mental disease is always an individual affair and that characteristic symptoms and syndromes have little meaning apart from the individual and the setting in which they develop. This includes, of course, the individual's endowment and personality, the history from his earliest days as well as the general mental and physical status at the time he is examined Encouraged by the fundamental simplicity of this approach, generally known as psychobiology, the student, who will soon be a practitioner, need not be hesitant about treating patients with personality difficulties, or pessimistic about their outcome.

—F. G. E.

What Is Truth?

What is truth? Asked jesting Pilate
Not waiting for an answer
To what is still a dread debate
To every quiet thinker.

The question now engraved in fame
Survives the man who asked it
For Pilate only lives in name
Because he tried to hide it.

A hair divides the false and true
For those whose troubled conscience
Respects the truth enough to know
The virtue of its presence.

The truth is beauty one has said
That's all we need to know
And beauty though well understood
Has no better been defined.

The true, the good, the beautiful
May combine and interlace;
And can't, like crude material,
Be refined by paraphrase.

The spirit of some things may be
In other terms retained
But delicate shades of meaning
Are by juggling lost or maimed.

Truth, like an Ariadne thread,
Will guide one out of darkness
He may not see it, yet it leads
In the paths of righteousness.

When the thread of truth is broken
Like a pitcher at the fount
A jest or equivocation
Cannot quench the soul in doubt.

For truth is not material
From life a thing apart
That one may break and make at will
By some mystic charm or art.

To impart clear explanation
Of a truth that is profound
We must wait a new sensation
Not yet born in human mind.

To know the truth should be the end
Of all our education
To know it not, and to pretend
Is mere hallucination.

—H. A.

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Selection of Students

The University of Minnesota Medical School has adopted a plan of selection of students which should go far to eliminate those students who ultimately fail of promotion in the medical school.

A "rating" sheet has been devised. Two copies will go to the dean of the arts college at which the applicant had his academic work, with the request that he place these in the hands of two members of his faculty who know the applicant most intimately; one copy goes to the principal of the high school which the applicant attended with the request that it be placed in the hands of the teacher who knew the applicant and his family intimately, and one copy goes to the applicant's physician.

The information thus secured, and information coming from other sources, personal interviews, records of college work and the applicant's performance on various tests which will be given, including the aptitude test, will be the basis for acceptance or rejection of the applicant.

Copies of these blanks may be secured from Dr. H. S. Diehl, dean of the division of medical sciences, University of Minnesota, Minneapolis.

College News

University of Alabama
School of Medicine

Dr. Marye Y. Dabney, Birminghame surgeon and editor of the Southern Medical Journal, gave a lecture on February 22 at an open meeting of Alpha Epsilon Delta, honorary premedical fraternity, at the University of Alabama. His subject was "The Approach to Medicine with Remarks Upon One of Its Founders." Dr. Philip B. Armstrong, assistant professor of anatomy in Cornell University Medical College, has been appointed professor of anatomy, succeeding Dr. Franklin S. Dubois, who has accepted a fellowship in medicine in the Mayo Clinic. Dr. Oscar O. Christianson has been appointed assistant professor of bacteriology and pathology, succeeding Dr. Cornelius S. Hagerty who will enter the practice of medicine. Dr. Benjamin N. Miller, Jr., has been appointed instructor in physiological chemistry and physical diagnosis, succeeding Dr. Wallace Marshall who resumes the practice of medicine. Dr. Herbert K. Fidler has been promoted to assistant professor in bacteriology and pathology.

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Louisiana State University
School of Medicine

Dr. George J. Taquino has been promoted to professor and head of the department of otorhinolaryngology. Dr. George S. Bel, professor and head of the department of medicine, is now also superintendent of Charity Hospital. Construction of the new hospital building has been begun. It will cost $8,000,000; range from 11 to 19 stories and contain at least 2,000 beds. In addition to the main building there will be an ambulance house, a nurses' home, a laundry building, an extension of the power plant, an incinerator, carpentry and machine shops.

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West Virginia University
School of Medicine

The Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association has allowed a grant of $150 to Dr. E. J. Van Liere to investigate the effect of ephedrine on absorption from the small intestine.

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University of Louisville
School of Medicine

The Centennial Celebration of this school was held March 31 to April 3. The program included the presentation of papers by many invited speakers, men who are well known in medical education circles, ward rounds, inspection of the school and dedication of the new outpatient department building, ending with a public meeting at the Louisville Memorial Auditorium at which Dr. Simon Flexner, director emeritus of the Rockefeller Institute for Medical Research spoke on "A Half Century of American Medicine."

Among the guest speakers were Dr. Mont R. Reid, professor of surgery in the University of Cincinnati; Dr. Roy Wesley Scott, clinical professor of medicine in Western Reserve University; Dr. M. A. Blankenhorn, professor of medicine in the University of Cincinnati; Dr. Willis D. Gatch, dean Indiana University School of Medicine; Dr. Hugh J. Morgan, professor of medicine, Vanderbilt University; Dr. A. Graeme Mitchell, professor of pediatrics in the University of Cincinnati; Dr. Lawrason Brown of the Trudeau Sanatorium; Dr. E. W. Goodpas-

ture, professor of pathology, Vanderbilt University; Dr. A. N. Richards, professor of pharmacology, University of Pennsylvania; Dr. Chauncey D. Leake, professor of pharmacology, University of California, and Dr. Quitman U. Newell, professor of clinical obstetrics and gynecology, Washington University.

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University of Toronto
Faculty of Medicine

The undergraduate student body publishes the University of Toronto Medical Journal to serve as a medium for student expression and to bring to the student recent articles of scientific interest. This journal is published six times a year. The editorial board consists of students with an advisory staff consisting of faculty members. Students contribute many of the original papers and deserve praise for their efforts.

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University of Cincinnati
College of Medicine

Beginning with the class of 1938-1939, the tuition fee will be $450 for residents of Cincinnati and $500 for nonresidents.

The sum of $200 was received from an anonymous donor to be known as the Pavaex Appreciation Fund for Research in the department of surgery.

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University of Virginia
Department of Medicine

The second Alpha Omega Alpha lecture for the current session was delivered February 15 by Dr. Julian M. Ruffin, of the Medical Department of Duke University. Dr. Ruffin spoke on the subject of "Pellagra."

At the meeting of the University of Virginia Medical Society February 22, Dr. C. C. Coleman, of Richmond, spoke on "Recent Advances in Neuro-Surgery."

Dr. I. C. Riggin, State Commissioner of Health, Richmond, Virginia, Dr. W. H. Frost, professor of epidemiology in the Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland, and Dr. H. S. Mustard, of the Department of Public Health Administration of the Johns Hopkins School of Hygiene and Public Health, recently delivered addresses before the senior medical class.

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New York University
College of Medicine

Following a recent meeting of the Council of the University it was announced that Dr. Meredith Fairfax Campbell has been appointed professor of urology to fill the vacancy left by the resignation of Dr. Alfred Townsend Osgood who has become professor emeritus.

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Boston University
School of Medicine

In the list of Fellowships granted by the John Simon Guggenheim Foundation for 1939, is included Dr. William C. Boyd, assistant professor of biochemistry. His fellowship will allow him to continue his studies of blood groups among peoples in southwestern Asia, as data for anthropological investigations. According to the Guggenheim announcement, anthropologists believe that Dr. Boyd's work may yield important relationships existing between peoples living at the present time and those living at the earliest periods of history.

During the first fellowship year which started in the summer of 1935, Dr. Boyd made a comparative study of the blood types of ancient and living Egyptians; the blood types of ancient peoples being determined by the examination of mummified tissue according to a process discovered by Dr. Boyd.

Woman's Medical College of Pennsylvania

Dr. Linda B. Lange has been appointed professor of bacteriology and immunology, effective in July, 1937.

Dr. Lange is a graduate of Goucher College and of the Johns Hopkins University Medical School. She has been on the teaching staff of the Johns Hopkins University School of Hygiene and Public Health since 1919, and associate professor of bacteriology in that school since 1927.

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University of California Medical School

Dr. Francis Scott Smyth, professor of pediatrics, will attend the meetings of the American Pediatric Society at the University of Virginia and the meetings of the Society for Pediatric Research and the Society for Clinical Investigation in Atlantic City, New Jersey on May third and fourth. He is president-elect of the Society for Pediatric Research and will hold office until 1938. While East he will visit pediatric centers in Baltimore, New York, New Haven, and will be at the annual meeting of the Northwestern Pediatric Society in Minneapolis, Minnesota.

Dr. Robert S. Stone, Associate Professor of Roentgenology, delivered the Annual Christian Lecture on Cancer at the University of Minnesota in March and was also the guest speaker at the 84th annual meeting of the Minnesota Medical Association.

Dr. Chauncey D. Leake, Professor of Pharmacology, attended the Southern Clinical Conference, Dallas, Texas, where he gave a series of lectures, on invitation. He also attended the University of Louisville Medical Centennial on March 31, and gave a special address; he also spoke before the Terre Haute Academy of Medicine, Terre Haute, Indiana, and the Sangamon County Medical Society in Springfield, Illinois.

Dr. Theodor L. Althausen, Associate Professor of Medicine, will attend the meeting of the American Gastro - Enterological Association, June 7 and 8, Atlantic City, New Jersey. He will present a paper on "Deposition of Glycogen in Normal and in Experimentally Damaged Livers After Oral and Intravenous Administration of Dextrose," which shows that in normal rats and in rats with moderate hepatic damage intravenous administration of dextrose leads to deposition of about fifty per cent more glycogen in the liver than oral administration and in rats with severe hepatic damage, the reverse is true. Dr. Althausen's paper will discuss the explanation for these findings and their application to treatment of diseases of the liver.

Dr. Isabella H. Perry, Instructor in Pathology, attended the meeting of the American Association for Cancer Research held in Chicago in March. She read a paper on "The Development of Tumors in Female Mice Treated with 1:2:5:6 dibenzanthracene and Estrone." Dr. Perry explained in her paper that as a result of her work a large number and variety of tumors developed. In some of the tumors, a chronological relationship was apparent.

The Medical School was honored by two distinguished visitors from the Orient. Dr. K. Kawaishi of Nogoya, Japan, showed an interesting film on "The Methods of Taking Roentgen Cinematographs of Human Organs and Blood Circulation with Motion Pictures." Dr. Chenk Shang Mei of Shanghai, China, spoke to the faculty and students on the anti-narcotic work in China. Dr. Mei, a graduate of Columbia University in 1921, outlined the plans that the Chinese Government, under Chiang-Kai-Shek, has established in an effort to control drug ad-

diction in China, He pointed out that the law calling for the imposition of death on incurable addicts might seem very severe to those of us who did not know the facts, but explained that the government felt that the huge number of addicts in all classes of society in China made it impossible for that country ever to advance nationally until the vice was controlled.

He pointed out that the "war lords" accumulated large sums of money by forcing the peasants to grow opium. Taxes collected from opium enabled the "war lords" to establish and maintain armies in opposition to the central government. He mentioned that the law is not rigidly enforced but is of value because of the psychological effect. The desire for self-preservation brings addicts to the hospitals for the treatment, most of them having the determination to get well. This is a great contrast to the attitude of addicts in other parts of the world. In his talk, Dr. Mei emphasized the problem that the Chinese had to face with the peddling and smuggling of opium.

There are more than one thousand hospitals in China dealing with drug addicts, Dr. Mei being the head of one of three hospitals in Shanghai. He spoke particularly of the fine work being done by United States Public Health Service and of the great value of this to the Chinese who have not the funds or the trained men to enter into this field as effectively as the Americans.

Under the auspices of the Division of Medical History and Bibliography, a series of lectures on the medical history of the State of California, with particular reference to the physicians who were instrumental in founding the University of California Medical School and those who devoted their efforts to building its various activities, was held for the faculty, students and others who were interested. In the opening lecture, Dr. Henry Harris told "How the Site of the Medical School Was Chosen"; Dr. E. L. Gilcreest spoke on "Toland"; Dr. R. T. Legge on "McLean"; Dr. W. I. Terry on "Huntington"; Dr. C. D. Leake on "Blake"; and Dr. H. C. Moffitt on "William Watt Kerr." The lectures were planned by Dean Langley Porter, who is the chairman of the Division of Medical History.

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Western Reserve University
School of Medicine

Dr. T. Wingate Todd, professor of anatomy of the School of Medicine of Western Reserve University, gave the first annual Clarence J. Grieve Foundation lecture March 1, at the Clarence J. Grieve Foundation lecture March 1 at the Clarence J. Grieve Library. He spoke on "Facial Growth and Pharyngeal Health."

Every one of the sixty-one seniors of the School of Medicine of Western Reserve University who expects to receive the degree of M. D. in June has accepted an internship for next year.

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Washington University
School of Medicine

Jackson Johnson Scholarships: Five new honor scholarships in medicine have been awarded. These awards are made on a competitive basis to applicants of outstanding ability who possess personal qualities, habits, and aptitude likely to form the basis for productive leadership in medical practice. Students of outstanding promise interested in medicine are in some instances unable to attend a medical school because of financial limitations. The loss of such men from the profession of medicine should be avoided. Accordingly, from the bequest of Mr. Jackson Johnson a number of new scholar-

ships have been provided for students of outstanding ability and promise of high achievement. Each scholarship will give an annual stipend of at least $300 and not more than $1,000, varying in accordance with the financial state of the student who receives the award. These awards will be renewed for the subsequent years of the medical course, depending upon the character of work done each year. A few students of exceptional ability and personal fitness may thus receive both the distinction implied in the award, and a substantial contribution toward the cost of their preparation for later service in medicine or the medical sciences.

McMillan Scholarship: Announcement is made of the award of the Eliza McMillan Scholarship, by the Chancellor of Washington University upon recommendation of the School of Medicine, given each year to a deserving woman student. The award has been made to Shirley Mae Fitch, assistant in the zoology department, Denison University, past three years.

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University of Vermont
School of Medicine

"Plague and Leprosy in the Middle Ages" was the title of a lecture delivered by Dr. H. E. Sigerist, of the Johns Hopkins Institute of the History of Medicine, in the series presented by the Osler Clinical Society for undergraduate medical students at the University of Vermont.

Lieutenant Colonel Robert H. Duenner of the Medical Corps, United States Army, instructor for all medical reserve officers in the first corps area, delivered a lecture April 5, with moving pictures showing medical department units in action.

Colonel Duenner is a graduate of George Washington University, the Army War College, the Army Industrial College, the Army Medical School, and the Medical Field Service School.

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University of Western Ontario
Faculty of Medicine

Dr. Madge Thurlow Macklin gave the Catherine Milligan McLane Lecture at Goucher College, Baltimore, Md., on the fifteenth of April. Her subject was "The Inheritance of Disease and Its Relation to the Practice of Medicine."

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Harvard University
Medical School

Faculty Appointments: Important mid-year faculty appointments at Harvard were: Research fellows in Surgery, Dr. Anders J. W. Hagstromer of the Karolinska Institute in Stockholm; Mr. Edward H. Holling, of the Royal College of Surgeons (London) and Dr. John E. Snyder. Dr. Jesse L. Connell was appointed research fellow in pathology.

General News

Gifts to Universities

Nearly one-quarter of a billion dollars has been given to 46 colleges and universities in the United States during the past six years, according to a compilation of giving to education made by the John Price Jones Corporation, fund-raising consultants. The study shows that although giving to education took a decided drop after 1930, it now shows an increase.

The study was based upon figures supplied by the 46 colleges and universities and shows that from the year 1930-31 through 1935-36 the total was $244,812,968. Of this sum, $154,334,593 was in gifts and $90,478,375 was in bequests.

The total gifts and bequests to these institutions by years was as follows:

1930-31	$77,867,381
1931-32	47,814,068
1932-33	26,293,225
1933-34	23,118,881
1934-35	31,248,735
1935-36	38,470,678

Compilation of gifts and bequests to 37 men's and coeducational institutions over the six-year period shows that Yale University received the largest amount; its total of gifts and bequests was $58,402,456, or 25 per cent of all the gifts and bequests to the 37 institutions considered. Harvard was second with total gifts and bequests for the six-year period of $40,145,347 and the University of Chicago third with total gifts and bequests of $28,853,603. The five colleges receiving the largest totals of gifts and bequests were Yale, Harvard, the University of Chicago, Columbia, and the University of California. These five colleges received a total of $153,970,738, or 66 per cent of the total given during six years to 37 institutions. The five colleges receiving the second largest totals were Cornell, Pennsylvania, Princeton, Johns Hopkins, and New York University, and these five secured a total of $34,059,053, or 15 per cent of the total.

Of nine women's colleges studied, Vassar showed the largest amount received in gifts and bequests, $2,268,444, during the six-year period; Wellesley was second with $2,108,839; and Mount Holyoke, third with $2,029,081. The total of gifts and bequests to the nine leading men's and coeducational institutions was $183,090,823 for the six-year period, as compared with $11,138,700 for the nine women's institutions studied.

Examination of total figures shows that giving to education took a sharp drop after 1930-31 and reached its low peak in 1933-34 and has been increasing since 1934-35.—*J. Higher Educ.*, March, 1937.)

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Predicting Success of College Students

The co-operative English test of the American Council on Education has been used at Temple University as a measure for predicting the success of prospective college students. It was hoped that the scores made on the three parts of this test—usage, spelling, and vocabulary—might give information to substantiate that presented by the high-school record and the American Council psychological test. The 120 students who took this series of tests and who were admitted in February, 1935, completed their first year of college work last February. The scores made on the co-operative English test were

found as valuable for prediction as is the high-school record or the American Council aptitude test. The correlation found in this study between the first-year college average and the high-school record and aptitude score is .57 ± .03. This study was reported by M. E. Gladfelter, registrar of Temple University, in *School and Society* for September 19, 1936—*J. Higher Educ.*, March, 1937.)

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Projects and Activities of Alpha Epsilon Delta

1. To promote an interest among premedical students to secure a thorough and comprehensive foundation before entering medical school.

(a) This can be accomplished by offering some award to the premedical students making the best grades. The nature and scope of such an award would be up to the individual chapters but some effort should be made to encourage scholastic excellence among premedical students.

(b) Recommend and encourage that all premedical students take four years of a general cultural course leading to a bachelor's degree as the best preparation for the study of medicine. Have talks before the premedical students by members of the medical school on the requirements and foundation for medical study as well as by physicians and students who are now in medical schools. Bring emphasis to bear on the fact that premedical courses are a foundation on which the study of medicine is built and not just something to get by in order to get into a medical school. They give the true cultural background for the production of an educated gentleman as well as a professional man on graduation from the medical school.

2. Arouse the premedical students to an appreciation of the responsibilities of a medical career so that only those who are worthy of these responsibilities will desire to continue. Dissuade those students who are entering the study of medicine only as a means to make money, and therefore, approach their studies with the idea of making grades just enough to get by and get into medical school.

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Catholic Hospital Association

The twenty-second annual convention of the Catholic Hospital Association will be held in Chicago, June 14-18, 1937, under the presidency of the Reverend Alphonse M. Schwitalla. The Hotel Stevens is headquarters. An extensive exhibit is planned.

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C. R. B. Educational Foundation, Inc.

The C. R. B. Educational Foundation, Inc., was established in January, 1920, to promote the exchange of intellectual ideas and closer relations between Belgium and the United States and to commemorate the relief work of The Commission for Relief in Belgium and the Belgian Comité National de Secours et d'Alimentation during the Great War. The Fondation Universitaire, a cooperating foundation, was organized and received a charter from the Belgian Government in July, 1920. The American and the Belgian foundations have a common origin and both foundations received their principal endowments from the same source, namely, from funds remaining in the hands of The Commission for Relief in Belgium after the completion of active relief operations.

At present, the C. R. B. Educational Foundation, Inc., maintains the exchange activities between both countries by means of fellowships, lectureships, subscriptions to periodicals and other appropriate means. In addition to substantial endowments, direct aid has been given to the Universities of Brussels and Louvain and certain other institutions in Belgium.

The Fondation Universitaire aids higher education inside Belgium by means of loans to students, grants for travel, aid to publications and scientific associations. Close contact is maintained between the two foundations and the C. R. B. Educational Foundation is represented on the Council of Administration of the Fondation Universitaire.

A joint selection committee of both foundations meeting in Brussels transmits nominations of Belgian Fellows for study in the United States to the C. R. B. Educational Foundation in New York for final action. This committee includes the Rectors of the four universities, the Vice-Presidents of the C. R. B. E. F. in Belgium, and the Director of the Fondation Universitaire. From time to time others sit with the committee. From 1920 to 1925 the awards were limited to students who had finished their university work in Belgium and who had the status of "graduate students." Since 1925 six "advanced fellowships," open to members of faculties of Belgian higher institutions have been awarded each year for study travel trips in the United States in addition to eight "graduate fellowships." There are no restrictions on subject of study. Renewals or extensions of fellowships are frequently granted.

The American Fellows, also "graduate students," were originally nominated by American Universities. Since 1923 they have been selected by a central fellowship committee and from 1926 appointments have been restricted to members of the teaching and research staffs of recognized American educational institutions. The attempt is made to send each year to Belgium three or four scholars who have definite plans for independent study or research in a subject which can best be carried out in that country.

The aim in all cases is to select students and scholars who will stimulate, by personal and public contacts, closer cultural and intellectual relationships between Belgium and the United States.

A candidate for a fellowship, to be eligible, must

(1) be an American citizen;
(2) have a sufficient speaking and reading knowledge of French or Flemish;
(3) be a member in good standing of the faculty of an American college, university, or research institution, and have the intention of continuing in academic teaching or research;
(4) have definite plans for his proposed work in Belgium;
(5) be capable of independent study or research;
(6) be in good health.

An applicant should be a representative American scholar who in his personal and public contacts gives promise of stimulating closer cultural and scientific relations between Belgium and the United States.

An applicant will be required to state why his plans for work in Belgium can best be carried out there rather than elsewhere and to explain what specific benefits the grant of a fellowship will contribute to his future career in the United States. An applicant, who expects a sabbatical leave or leave of absence, is eligible to apply. The fellowships are open to men and women.

The basic fellowship stipend for living expenses is $120 monthly with allowances for necessary traveling expenses. A supplementary stipend may be granted to fellows with dependents. In general the tenure of the fellowship will be adjusted to the plan of study in each case and appointments will be made usually for periods of from four to twelve months.

Applications must reach the Fellowship Committee before December

15th, for appointments for the following academic year. Successful candidates will be notified about March 1st. The Fondation Universitaire of Belgium, a cooperating foundation, assists the fellows in arrangements for their studies in Belgium.

The Foundation reserves the right to withdraw a fellowship and terminate payments in case of conduct that is, in the opinion of the Foundation or its representatives, prejudicial to the interests of the Foundation.

Application forms and further information may be obtained by addressing the Secretary, C. R. B. Educational Foundation, Inc., 420 Lexington Avenue, New York, N. Y.

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American Association for the Study of Goiter

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300.00 and two honorable mentions for the best essays submitted concerning experimental and clinical investigations relative to the thyroid gland. This award will be made at the discretion of the Society at its next annual meeting, to be held in Detroit, Mich. June 14, 15 and 16th.

The competing manuscripts, which should not exceed 3,000 words in length, must be presented in English and typewritten, double-spaced copy sent to the Corresponding Secretary, Dr. W. Blair Mosser, 133 Biddle Street, Kane, Pennsylvania, not later than April 1, 1937. Manuscripts received after this date will be held for competition the following year or returned at the author's request.

The committee who will review the manuscripts is composed of men well known in the field of research and clinical investigation of problems related to the thyroid gland.

The Association will publish the manuscript receiving the Prize Award in their annual Proceedings, and reserve a place on the program of the annual meeting for presentation of the manuscript by the author, if it is possible for him to attend. This will not prevent its publication, however, in any journal selected by the author.

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Examination for Entrance Into the Medical Corps of the Navy

An examination for commission in the Medical Corps of the U. S. Navy and for appointment as interns in the Medical Corps of the U. S. Navy will be held, beginning May 10, this year. There are about fifty vacancies in the corps to be filled. The examination will be held at all U. S. naval hospitals and the U. S. Naval Medical School, Washington, D. C.

Candidates for admission must be between the ages of 21 and 32 years at the time of appointment, graduates of or senior medical students in Class "A" medical schools only.

Those who are interested should write the Surgeon-General, U. S. Navy, Bureau of Medicine and Surgery, Navy Department, Washington, D. C., for further information in regard to the examination and the procedure to follow for them to appear before one of the examining boards.

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Think Right, Feel Right

To treat emotional illness, Dr. Joseph H. Pratt, professor of clinical medicine at Tufts College, has opened a clinic as the Boston Dispensary. Once a week his "thought-control class" receives mental treatment, suggestion, and re-education to dispel ills and pains caused by wrong thinking.

Basic tenets of the class: Joy is a good stimulant to insure a healthy state, while fear, anger, and sorrow make for physical ailments; bad emo-

tional habits cause common personality disorders such as hysteria and neurasthenia.

Says Dr. Pratt, "The outward expression of emotional reactions the result of bad habits of feeling, often resembles that produced by organic disease. Pain anywhere, including the teeth, may be caused by hysteria. After new habits of thoughts are formed, the patient usually is quickly cured.

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International College of Surgeons

Mrs. William Randolph Hearst has placed her prestige and a high priced piece of New York City real estate at the disposal of organizers of the new International College of Surgeons. Drs. Harold L. Hunt and Max Thorek, of New York and Chicago, respectively, are two prime movers for the college in this country. Mrs. Hearst has offered to build a museum of surgery to contain, in addition to exhibits, the college's offices and meeting rooms. It is to be known as the Millicent V. Hearst Foundation.

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New Tropical Diseases Laboratory

A three-year study has convinced hospital authorities in New York City that there is need for a tropical disease laboratory in their metropolis. Accordingly, a new research unit has been established at Bellevue Hospital. A preliminary survey proved that various tropical ailments, especially parasitic infestation of the intestinal tract, are common among the city's foreign population. Dr. Douglas Symmers, general director of laboratories of the municipal department of hospitals, predicts that, as a result of improved transportation facilities, tropical-disease cases are bound to become more and more frequent in New York.

Unification of Medical Curriculum Deemed Desirable

Medical education has become too specialized and standardized, and medical educators are too prone to teach individuals divisions of medical science and practice without regard for their relationship to the whole. This statement was made by the late William McKim Marriott, M.D., dean of the University of California Medical School.

Medical schools, said the late dean, depend too much on the ability of the student to organize the material which is given him in class. The component parts of a good medical education are given him, but little attempt is made by the faculty to make him realize their relation to the whole.

It would be better, said Doctor Marriott, if from the very start of the course, the student could have before him some pictures of the complete medical education. The curriculum of the medical school should be so coordinated that each separate subject would be taught not as an isolated branch, but as part of a central idea. There should be no break between preclinical and clinical instruction, according to the article. The study of medical science should be continued while clinical study is being carried on.

The unification of the curriculum, said Doctor Marriott, would necessarily mean the breaking down of some department lines and a mingling of the members of the departments. Frequent symposiums and comprehensive examination in which many branches of medical science are treated would be represented and would be beneficial.

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Research in Medical Economics

The Julius Rosenwald Fund has made a grant of $165,000 over a five-year period, to the Committee on Research in Medical Economics,

it was announced by Edwin R. Embree, president of the Fund. This committee has recently been incorporated in New York, with Michael M. Davis as chairman, the other members being Robert E. Chaddock, Professor of Statistics, Columbia University; Henry S. Dennison, President, Dennison Manufacturing Co., Framingham, Mass.; Walton H. Hamilton, Professor of Law, Yale University and Director, Bureau of Research, Social Security Board, Washington; Elvin S. Johnson, Director, New School for Social Research, New York; Paul U. Kellogg, Editor, The Survey Graphic, New York; Harry A. Millis, Professor of Economics, University of Chicago; Fred M. Stein, retired banker, New York.

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American Documentation Institute

The American Documentation Institute has been incorporated on behalf of leading national scholarly, scientific and informational societies to develop and operate facilities that are expected to promote research and knowledge in various intellectual fields. A first objective of the new organization will be to develop and apply the new technique of microphotography to library, scholarly, scientific and other material. It will be able to conduct scholarly publication by various methods as required by cooperating organizations. Organized as a Delaware corporation "not for profit" but for educational, literary and scientific purposes, the new organization resulted from a meeting attended by delegates from national councils, societies, and other organizations in Washington on March 13.

The board of trustees elected consists of: Dr. Robert C. Binkley, Western Reserve University; Dr. Solon J. Buck, Director of Publications, National Archives; Watson Davis, Director, Science Service; Dr. James Thayer Gerould, Librarian, Princeton University Library; Dr. Ludwig Hektoen, Chairman, National Research Council.

Such a national organization was foreseen as an outcome of Science Service's documentation activities when they were begun in July, 1935, implemented with grants from the Chemical Foundation and conducted with the cooperation of the U. S. Naval Medical School, the U. S. Department of Agriculture Library, the Bureau of the Census, the Works Progress Administration, the Library of Congress and other agencies.

Bibliofilm Service has been conducted by Science Service in cooperation with the Library of the U. S. Department of Agriculture as a service to research workers, and auxiliary publication through microfilm has been conducted by cooperation with leading scholarly and scientific journals. Science Service's documentation activities will be transferred to the new American Documentation Institute.

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University of Minnesota —Center for Continuation Study

The University of Minnesota has offered for some time certain extension classes, correspondence courses, short courses and summer courses, and last November opened its Center for Continuation Study. The Center is designed for serious study rather than for conventions or social gatherings.

The medical courses lasted from January 17 to February 13, a week being devoted to each of the following subjects: Traumatic Surgery, Obstetrics and Gynecology, Pediatrics, and Internal Medicine. Some twenty doctors attended each week.

From April 12 to 24 there were given courses in roentgenologic diagnosis, irradiation therapy, and physical therapy.

Book News

Endocrinology: Clinical Application and Treatment

By August A. Werner, Assistant Professor of Internal Medicine, St. Louis University School of Medicine. Lea & Febiger, Philadelphia. 1937. Price, $8.50.

The opening chapters present fundamentals, showing their relationship in the maintenance of functional balance and our sense of well-being. Metabolism is explained and applied throughout. The influence of the endocrine glands on basic growth types is fully discussed and the intermediate variations of bodily configuration and development are shown.

Following the introductory chapters, each gland is considered individually with illustrations and descriptions of its gross anatomy and histological structure. The outstanding research in the isolation of hormones, preparation of extracts and postulation of hormonal substances is presented with the action of these substances on animals, birds and human beings. The disturbances in growth and development and the symptoms produced by disordered function are grouped into a syndrome with the history, examination, laboratory work and the possibilities for diagnosis of type conditions.

The treatment of endocrine conditions is restricted to those preparations and methods which accepted authorities and the author's experience have shown to be effective. The work frankly recognizes the limitations of present information, but succeeds in obviating those difficulties that have made the literature of endocrinology too technical and difficult to be easily understood. In a field in which so much is still hypothetical and nebulous, this work assembles a mass of valuable, sound and practical information.

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An Introduction to Medical Science

By William Boyd, M.D., Professor of Pathology in the University of Manitoba (now in the University of Toronto). Lea & Febiger, Philadelphia. 1936. Price, $3.50.

This book offers a general survey of disease. It covers its nature and causes, its effect on the various organs and systems and, finally, its diagnosis and prevention. It is purely introductory and necessarily brief, yet it is comprehensive. It has been written to provide for the special needs of the nurse, the technician, the premedical student and those laymen who desire to learn more of the principles of medical science. Technical terms have been reduced to a minimum and the emphasis has been placed on the disease processes. The function and structure of the different organs have been summarized and the relationship between pathological changes or lesions and the symptoms from which the patient suffers has been stressed to lead to an intelligent understanding of the condition. This treatment makes the work dynamic and functional rather than static and anatomical. In the final section the material is given a practical application in two chapters; one on the prevention of disease and the other on the nurse and the laboratory.

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Autopsy Diagnosis and Technique

By Otto Saphir, M.D., Associate Professor of Pathology, University of Illinois College of Medicine. Foreword by Dr. Ludvig Hektoen. Paul B. Hoeber, Inc. Medical Book De-

partment of Harper & Brothers. New York. 1937. Price, $5.

This manual is intended to meet the need of the medical student for an outline of autopsy technique and diagnosis of diseased organs and structures as seen at autopsy. Only one method is described—a modification of Rokitansky's. A diagnostic outline of gross lesions is given, only those met with most commonly. Emphasis on medicolegal cases is stressed in instances of sudden death. Many tables and illustrations go far to help the reader. Small; cheap; but good.

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Introduction to Comparative Biochemistry

By Ernest Baldwin, Ph.D., University Demonstrator in Biochemistry, Cambridge. The Macmillan Company, 1937. Price, $1.50.

A good book for undergraduates whose interest is great but their leisure small. Well illustrated and a carefully selected bibliography.

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Heart Disease

By Paul Dudley White, M.D., Lecturer in Medicine, Harvard Medical School. 2d Ed. The Macmillan Company, New York. 1937. Price, $7.50.

The book has been shortened and its bulk reduced by two changes: first, the abridgment of Part I which deals with methods of examination, and second, the reduction of the bibliography. The general principles and importance of the various methods of examination are presented in Part I with particular emphasis on recent developments. The bibliography is much abbreviated, to include only the most important key references contained in the full bibliography of the first edition, with the addition of titles of a few selected publications that have appeared in the last five years. Parts II, III and IV are concerned respectively with the incidence and etiological types of heart disease, structural changes, and disorders of function, and have been revised considerably to include the new developments of the past five years. Many of the illustrations have been replaced by new and better ones.

Two new appendices have been added, the first giving chronologically the historical development of the knowledge of the anatomy, physiology, pathology and medical aspects of the heart and circulation and the second giving the current classification of cardiac diagnosis approved by the American Heart Association.

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Inhalation Anesthesia

By Arthur E. Guedel, M.D., Associate Clinical Professor of Surgery (Anesthesia), University of Southern California School of Medicine. The Macmillan Company, New York. 1937. Price, $2.50.

The author presents a technic of teaching which he has evolved after years of experience with anesthesia which has proven to have value in the instruction of undergraduate medical students. Part I deals with principles of anesthesia; part II, with anesthesia accidents. Compact; well written; very interesting.

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Aids to Diagnosis and Treatment of Diseases of Children

By Dr. F. A. Allen, Lecturer in Infant Hygiene and Diseases of Children, Queen's University, Belfast, Ireland. 7th Ed. Bailliere, Tindall & Cox, London. 1937. Price, $1.50.

Aids to Pathology.

By Dr. Harry Campbell and Dr. Kenneth Campbell. 7th Ed. Bailliere, Tindall & Cox, London. 1937. Price, $1.50.

These two handy little books should prove to be a boon to the

student who has too little time to read the larger textbooks. These "aids" are more than a preparation for examination. They really give sufficient information of the fundamental or basic type on which the student can build as he goes along with his studies. And they are within reach of his pocketbook, which is an important item to any student.

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Preoperative and Postoperative Treatment

By Dr. Robert L. Mason, Assistant in Surgery, Massachusetts General Hospital, Boston. W. B. Saunders Company, Philadelphia. 1937. Price, $6.

Now that surgical technic has been developed so well, it is important that every cautionary measure be taken to insure that the patient will receive the greatest possible benefit from any surgical procedure to which he may be subjected. This book aims to that. It also gives instructions how to make the patient most comfortable during his convalescence or recovery from his operation. It is exceedingly well written; covers every contingency from the time of entrance to the hospital to the day of discharge for every type of patient—therefore should prove of great value to the student who as a practitioner, even though not a surgeon, is responsible for the patient's welfare.

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Diseases of Infants and Children

By J. P. Crozer Griffith, M.D., Emeritus Professor of Pediatrics, University of Pennsylvania, and A. Graeme Mitchell, M.D., Professor of Pediatrics, College of Medicine, University of Cincinnati. 2d Ed. W. B. Saunders Company. 1937. Price, $10.

This is a deservedly popular book. It is extremely bulky, but material which might not be needed by the student in his daily work has been put in small type, thus making selection of reading easier for him. Use has been made also of italics for emphasis of certain important subjects and also for conclusions in the case of controversial topics. Preventive measures are stressed and particular attention is paid to the section dealing with anatomy and physiology, growth and development and clothing. The bibliographic references are excellent. The numerous charts, tables, etc. are most valuable to the student aiding in preparing him thoroughly fo rthe care of both well and sick infants and children. The author deserves the highest commendation for his work.

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Taylor's Practice of Medicine

By E. P. Poulton, and others. 15th Ed. William Wood & Company, Baltimore. 1936.

The biggest change in this from previous editions is in the section on diseases of the tropics, which has been rewritten entirely and placed at the end of the book. Diseases of the larynx and tonsils are grouped together in a new section on diseases of the nose, throat and ear. Infectious diseases are arranged on an etiologic basis beginning with those due to ultrafilterable viruses, then those due to bacteria, fungi, spirochetes, protozoa, helminths and other metazoa. Many new subjects are described. The rheumatic diseases are brought together. Applied anatomy and physiology brings together many heretofore scattered sections of nervous and mental diseases. On the whole, the book is more useful than in previous editions because related subjects are brought together and correlated one with the other, thus presenting a clearer clinical picture, one which the student can understand more easily.

Handbook of
Ocular Therapeutics

By Sanford R. Gifford, M.D., Professor of Ophthalmology in Northwestern University Medical School. 2d. Ed. Lea & Febiger, Philadelphia. 1937. Price, $3.75.

A number of new preparations and procedures are introduced. Added features are full discussions of the vitamins and glandular extracts as they apply to ophthalmology, of the use of heat and cold, of contact dermatitis of the lids, of certain types of keratitis and corneal dystropgy and a short chapter on diseases of the orbit. The chapter on physical therapy has been revised. The work is a concise, authoritative and thoroughly modern guide to treatment. The author's extensive experience gives authority to his statements.

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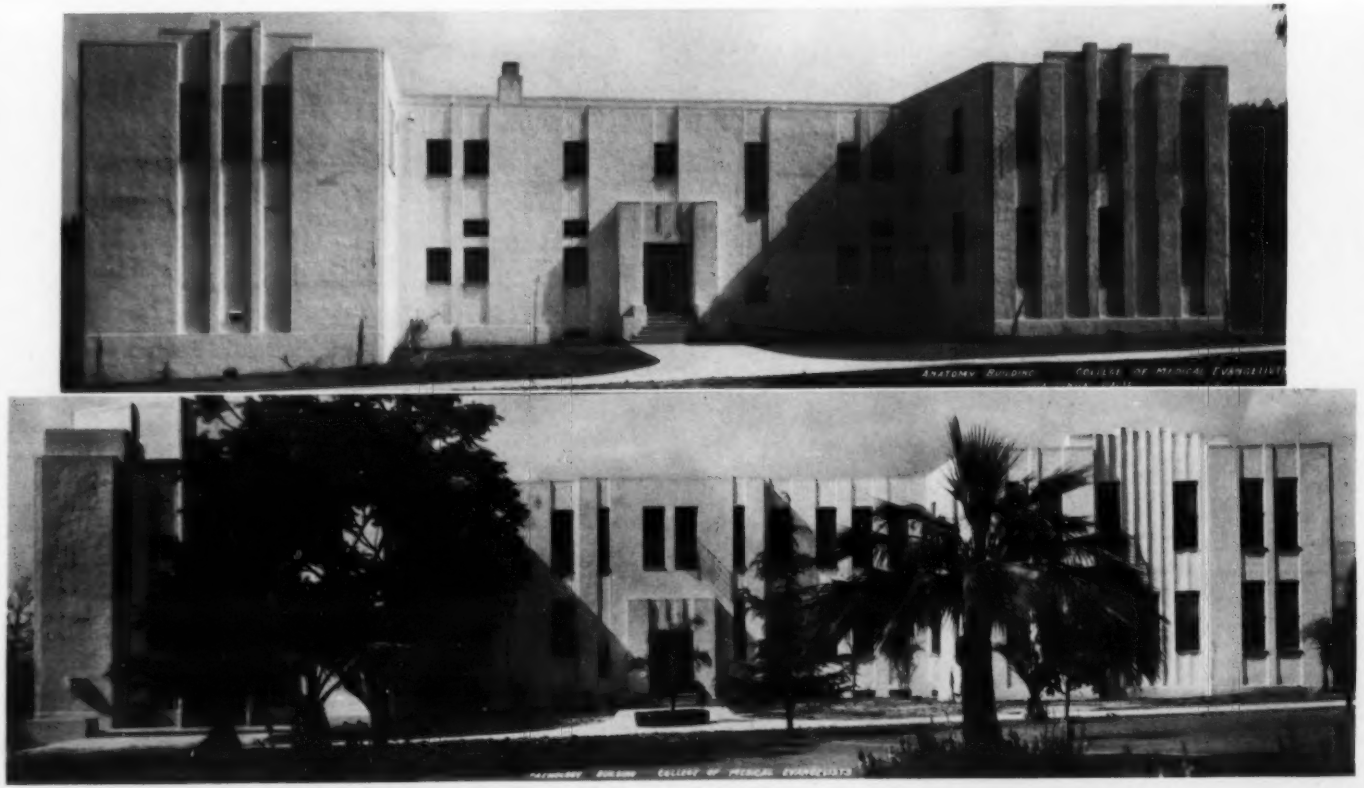
Cunningham's Textbook
of Anatomy

Edited by J. C. Brash, M.A., M.D., F.R.C.S. Ed., Professor of Anatomy, University of Edinburgh, and E. B. Jamieson, M.D., Lecturer on Anatomy, University of Edinburgh. 7th Ed. Humphrey Milford, Oxford University Press; William Wood and Company, Baltimore, 1937.

In this new edition the "B.R." nomenclature is used. This is "The revision of the *Basle Nomina Anatomica* which was approved by the Anatomical Society of Great Britain and Ireland at Birmingham in 1933." In the glossary on pages xvii to xxvi the corresponding terms of the B.R. and the B.N.A. are set opposite one another. This is interesting in view of the proposed revision of anatomical nomenclature by the International Commission set up by the Milan International Congress of Anatomists in September, 1936, which will be undertaken with the Nomina Anatomica of the Anatomische Gesellschaft as a basis. Many unnecessary duplicate figures have been omitted from this edition, thus saving space. The book now contains 1506 pages, as compared with 1554 in the 6th edition. A whiter paper is used, giving a better appearance. Many roentgenographs (long overdue in fact) have been added on special plates—on bones and joints—but also on special things like the injected ureters, renal pelves and calyces, and the intestinal tract. The muscular system, done over by Lockhart of Birmingham, is embellished with photographs of parts of the living body in action. Some attention has been given to anatomy in the living—a good feature which might well be followed to greater lengths. Attention has been given to the correction of many figure citation errors in the section on the nervous system of the 6th edition. The phrase "by the gradually drawing out of the existing bridges" (p. 803) still jars us. We crave something more specific than the statement (p. 820) that "The bulk of a nerve-cell has a more or less definite relation to the length of the axon which proceeds from it." The sentence at the bottom of page 823 beginning "From normal preparations," though improved, is still ambiguous. The figures of magnified cells and tissues are not always of highest quality, as the rather smudgy nerve cells shown on page 801. Many new figures are to be found, some of which are replacements. William Hole's sketch of Turner at work in his laboratory (Frontispiece) shows the master in the act of explaining a detail of skull morphology. This edition is, on the whole, above the standard of its predecessors.



New Anatomy (top) and Pathology (bottom) Buildings of the College of Medical Evangelists at Loma Linda, California.